DVD Player

DVP3980K

Service

DVP3980KX/77

Service

Service

Service Manual

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CLASS 1 LASER PRODUCT

Published by KC-ET0846 Service Audio Printed in The Netherlands Subject to modification

GB 3139 785 34291

Version 1.1

PHILIPS

Technical Specifications

TV standard	(PAL/50Hz)	(NTSC/60Hz)
Number of lines	625	525
Playback	Multi standard	(PAL/NTSC)

Video performance

Video DAC	12 bit, 108MHz
YPbPr:	0.7Vpp ---- 75 ohm
Video output	1Vpp ----- 75 ohm

Video format

Digital Compression	MPEG 2 for DVD,SVCD MPEG 1 for VCD	
DVD	**50Hz**	**60Hz**
Horiz resolution	720 pixels 1920pixels	720 pixels 1920 pixels
Vertical resolution	576lines 1080 lines	480 lines 1080 lines

VCD	**50Hz**	**60Hz**
Horiz. resolution	352 pixels	352 pixels
Vertical resolution	288lines	240 lines

Audio format

Digital	**MPEG/AC-3/ PCM**	**Compressed Digital 16, 20, 24 bits** fs, 44.1, 48, 96KHz
	MP3 (ISO 9660)	96,112,128,256kbps & variable bit rate fs,32, 44.1,48 kHz

Analogue Sound Stereo
Dolby surround compatible downmix from Dolby Digital multi-channel sound

Audio performance

DA converter	24 bits, 192KHz	
DVD	fs 96 kHz	4 Hz----44 kHz
	fs 48kHz	4 Hz----22 kHz
SVCD	fs 48kHz	4 Hz----22 kHz
	fs 44.1kHz	4 Hz----20 kHz
CD/ VCD	fs 44.1kHz	4 Hz----20 kHz
Signal-Noise (1kHz)		>90 dB
Dynamic Range (1kHz)		>80 dB
Cross talk (1kHz)		>70 dB
Distortion/Noise (1kHz)		>65 dB
MPEG MP3		MPEG Audio L3

Connections

YpbPr output	Cinch 3x
Video output	Cinch (yellow)
Audio output (L+R)	Cinch (white/red)
Digital output	1 coaxial IEC60958 for CDDA/ LPCM IEC61937 for MPEG1/2, Dolby Digital
HDMI Out	

Cabinet

Dimensions (w X h X d)	360 x 37 x 209 mm
Weight	Approximately 1.3 kg

Power consumption

Power supply Rating	120V; 60HZ
Power consumption	<10W
Power consumption in standby mode	<1W

Specifications subject to change without prior notice.

Safety instruction, Warning & Notes

Safety instruction

1. General safety

Safety regulations require that during a repair:

. Connect the unit to the mains via an isolation transformer.

. Replace safety components indicated by the symbol ⚠, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that after a repair, you must return the unit in its original condition. Pay, in particular, attention to the following points:

. Route the wires/cables correctly, and fix them with the mounted cable clamps.

. Check the insulation of the mains lead for external damage.

. Check the electrical DC resistance between the mains plug and the secondary side:

1) Unplug the mains cord, and connect a wire between the two pins of the mains plug.
2) Set the mains switch the "on" position (keep the mains cord unplug).
3) Measure the resistance value between the mains plug and the front panel, controls, and chassis bottom.
4) Repair or correct unit when the resistance measurement is less than 1MΩ.
5) Verify this, before you return the unit to the customer/user (ref. UL-standard no. 1492).
6) Switch the unit "off", and remove the wire between the two pins of the mains plug.

2.Laser safety

This unit employs a laser. Only qualified service personnel may remove the cover, or attempt to service this device (due to possible eye injury).

Laser device unit

Type : Semiconductor laser GaAlAs

Wavelength : 650nm (DVD)

: 780nm (VCD/CD)

Output power : 7mW (DVD)

: 10mW (DVD /CD)

Beam divergence: 60 degree

Note: Use of controls or adjustments or performance of procedure other than those specified herein, may result in hazardous radiation exposure. Avoid direct exposure to beam.

Warning

1.General

. All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handing during repair can reduce life drastically. Make sure that, during repair, you are at the same potential as the mass of the set by a wristband with resistance. Keep components and tools at this same potential. Available ESD protection equipment:

1) Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
2) Wristband tester 4822 344 13999.

. Be careful during measurements in the live voltage section. The primary side of the power supply , including the heat sink, carries live mains voltage when you connect the player to the mains (even when the player is “off”!). It is possible to touch copper tracks and/or components in this unshielded primary area, when you service the player. Service personnel must take precautions to prevent touching this area or components in this area. A “lighting stroke” and a stripe-marked printing on the printed wiring board, indicate the primary side of the power supply.

. Never replace modules, or components, while the unit is “on”.

2. Laser

. The use of optical instruments with this product, will increase eye hazard.

. Only qualified service personnel may remove the cover or attempt to service this device, due to possible eye injury.

. Repair handing should take place as much as possible with a disc loaded inside the player.

. Text below is placed inside the unit, on the laser cover shield:

CAUTION: VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN, AVOID EXPOSURE TO BEAM.

Notes: Manufactured under licence from Dolby Laboratories. The double-D symbol is trademarks of Dolby Laboratories, Inc. All rights reserved.

Notes

Lead-Free requirement for service

INDENTIFICATION:

Regardless of special logo (not always indicated)

One must treat all sets from 1.1.2005 onwards, according next rules.

Important note: In fact also products a little older can also be treated in this way as long as you avoid mixing solder-alloys (leaded/ lead-free). So best to always use SAC305 and the higher temperatures belong to this.

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free solder alloy Philips SAC305 with order code 0622 149 00106. If lead-free solder-paste is required, please contact the manufacturer of your solder-equipment. In general use of solder-paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free solder alloy. The solder tool must be able
  - To reach at least a solder-temperature of 400°C,
  - To stabilize the adjusted temperature at the solder-tip
  - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature around 360°C – 380°C is reached and stabilized at the solder joint. Heating-time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C otherwise wear-out of tips will rise drastically and flux-fluid will be destroyed. To avoid wear-out of tips switch off un-used equipment, or reduce heat.
- Mix of lead-free solder alloy / parts with leaded solder alloy / parts is possible but PHILIPS recommends strongly to avoid mixed
  solder alloy types (leaded and lead-free). If one cannot avoid, clean carefully the
  solder-joint from old solder alloy and re-solder with new solder alloy (SAC305).
- Use only original spare-parts listed in the Service-Manuals. Not listed standard-material (commodities) has to be purchased at external companies.
- Special information for BGA-ICs:
  - always use the 12nc-recognizable soldering temperature profile of the specific BGA (for de-soldering always use highest lead-free temperature profile, in case of doubt)
  - lead free BGA-ICs will be delivered in so-called 'dry-packaging' (sealed pack including a silica gel pack) to protect the IC against moisture. After opening, dependent of MSL-level seen on indicator-label in the bag, the BGA-IC possibly still has to be baked dry. This will be communicated via AYS-website.
  Do not re-use BGAs at all.
- For sets produced before 1.1.2005, containing leaded soldering-tin and components, all needed spare-parts will be available till the end of the service-period. For repair of such sets nothing changes.
- On our website:
  www.atyourservice.ce.Philips.com

You find more information to:

BGA-de-/soldering (+ baking instructions)
Heating-profiles of BGAs and other ICs used in Philips-sets

You will find this and more technical information within the "magazine", chapter "workshop news".

For additional questions please contact your local repair-helpdesk.

Software upgrade

Preparation to upgrade software

1) Start the CD Burning software and create a new CD project (Data Disc) with the following setting:
   Label: DVP3XXX (No need the label name)
   File Name: DVPXXXX_XX.BIN
   Power on the set and open the tray, then press <5><5> to check the File Name.

Note: It is required capital letter for the File System name.

2) Burn the data onto a blank CDR

A. Procedure for software upgrade:

1) Power on the set and insert the prepared Upgrade CDR.
2) The set will starts reading disc & response with the following display TV screen:
   Upgrade File DETECTED
   Upgrade?
   Press Play TO START.
3) Press <OK> button to confirm, then screen will display :
   Files coping…
   UPGRADING…
4) The upgraded tray will automatically open when files coping complete, then take out the disc.
5) About 1 minute later, the trace will automatically close when upgrading complete.

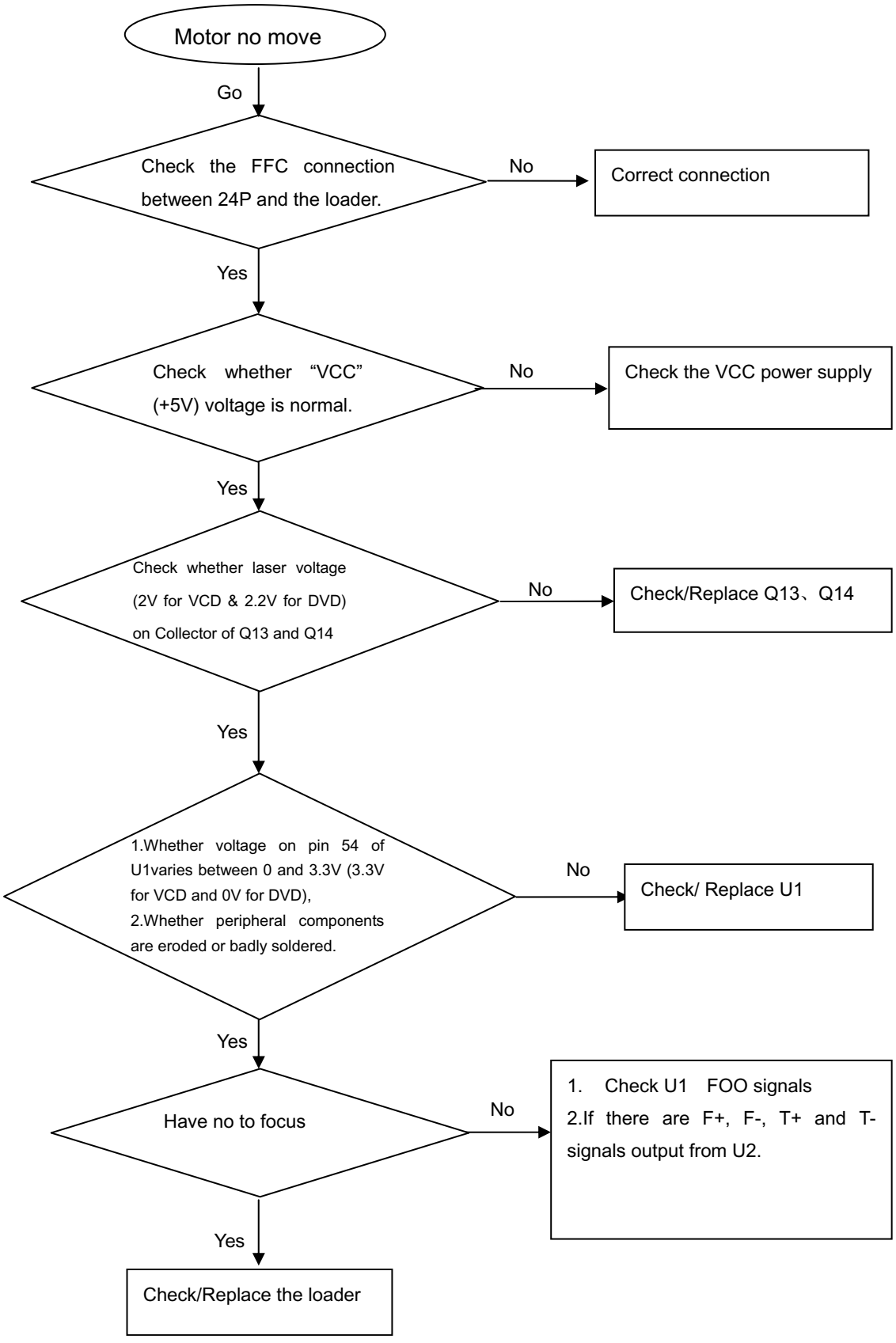
B. Read out the software versions to confirm upgrading

1) Power on the set and press <Setup> button on the remote control.
2) Press <1><3><7><9> button.
   The software version and other information are display on the TV screen as follows:

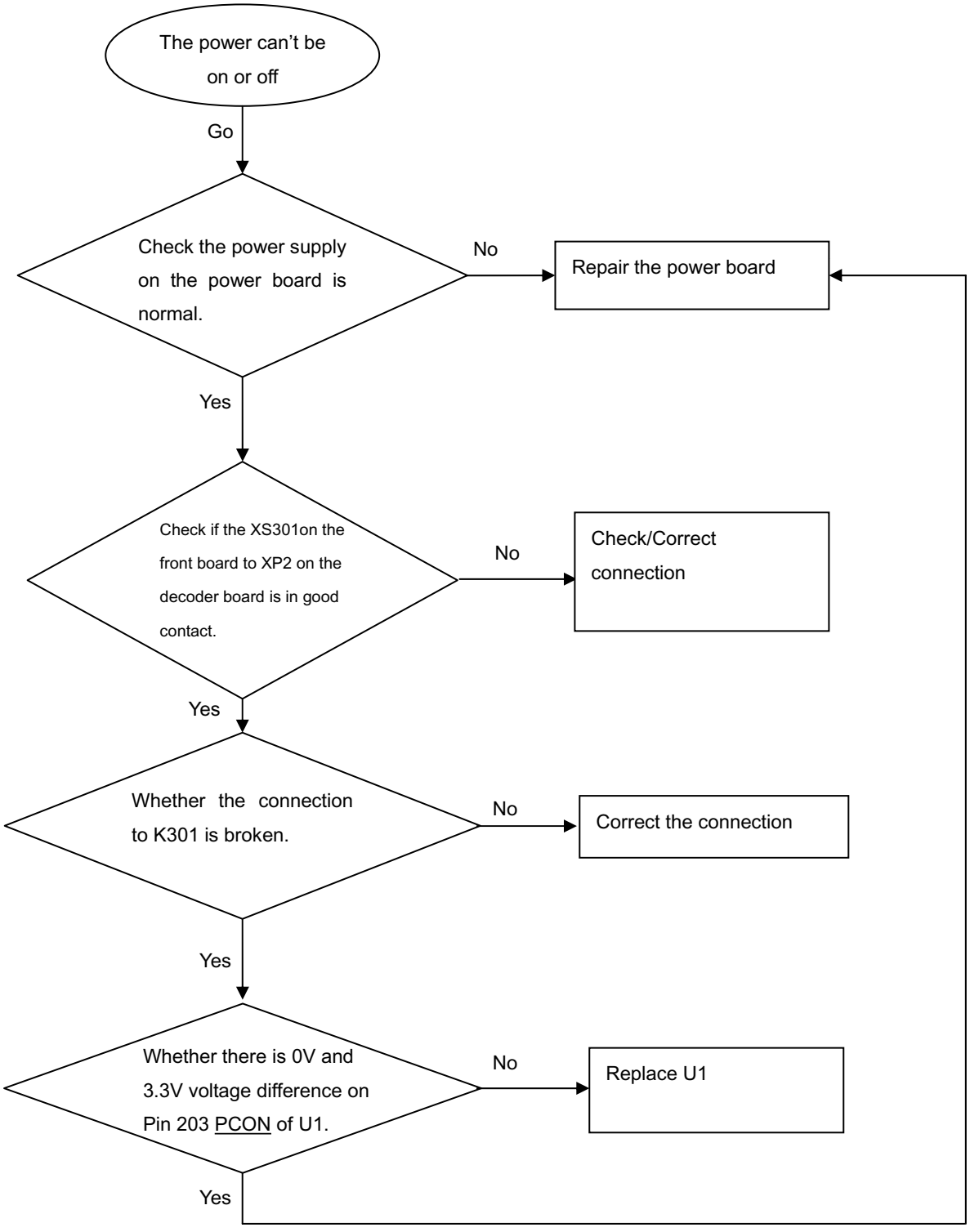
Version	XX.XX.XX.XX (Main version)
SUB-VER	XX.XX.XX.XX (software version of application software)
8032	XX.XX.XX.XX
Servo	XX.XX.XX.XX (software version of Servo)
RISC	XX.XX.XX.XX
DSP	XX.XX.XX.XX
Region Code	X

Caution: The set must not be power off during upgrading, Otherwise the Main board will be damaged entirely.

Spindle motor does not move


Motor no move
Go
Check the FFC connection between 24P and the loader.
No
Correct connection
Yes
Check whether "VCC" (+5V) voltage is normal.
No
Check the VCC power supply
Yes
Check whether laser voltage (2V for VCD & 2.2V for DVD) on Collector of Q13 and Q14
No
Check/Replace Q13、Q14
Yes
1.Whether voltage on pin 54 of U1varies between 0 and 3.3V (3.3V for VCD and 0V for DVD),
2.Whether peripheral components are eroded or badly soldered.
No
Check/ Replace U1
Yes
Have no to focus
No
1. Check U1 FOO signals
2.If there are F+, F-, T+ and T- signals output from U2.
Yes
Check/Replace the loader

The power can not be on or off


The power can't be on or off
Go
Check the power supply on the power board is normal.
No
Repair the power board
Yes
Check if the XS301on the front board to XP2 on the decoder board is in good contact.
No
Check/Correct connection
Yes
Whether the connection to K301 is broken.
No
Correct the connection
Yes
Whether there is 0V and 3.3V voltage difference on Pin 203 PCON of U1.
No
Replace U1
Yes

All output voltages on the power board is 0V or deviated.

All output voltages on the power board is 0V or deviated

Yes

Check whether F1 is blown

Yes → Replace F1

No

Check whether there is 300V on C1,C2

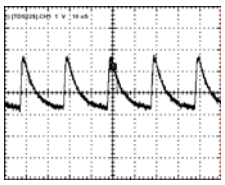
No → Replace C1,C2 if D1, D2, D3, D4 are normal.

Yes

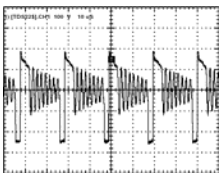
Check whether 100KHz oscillating signal on Pin6 of U1

No → Check/ replace U1.

U1(PIN 3 - RC waveform)



U1(PIN 8 - Drain waveform)



Yes

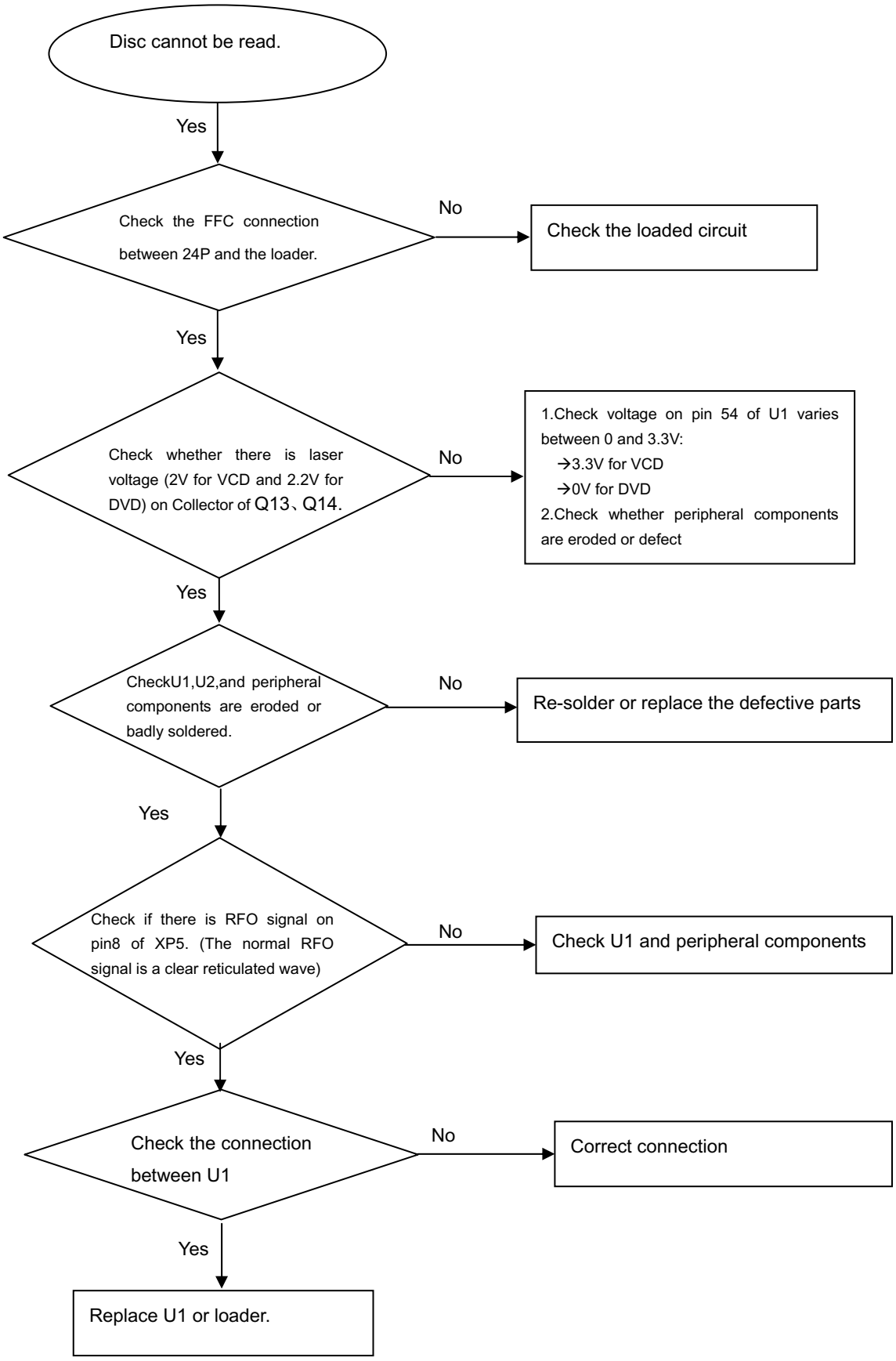
Check if +5V, +3.3v, +12V, -12V are short.

No → Check whether U2 are eroded.

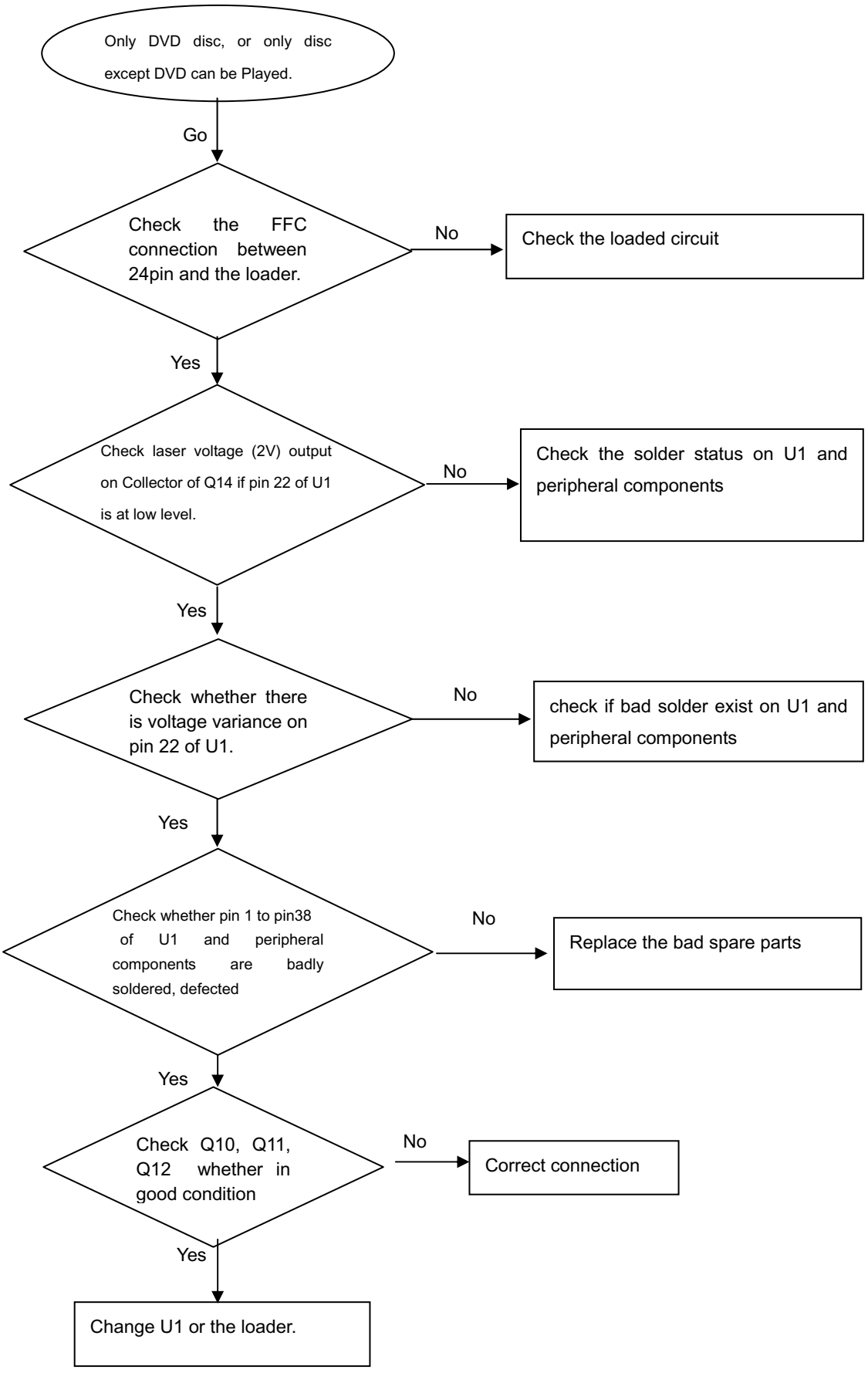
Yes

Check whether the components in the short-circuit voltage are defected or eroded.

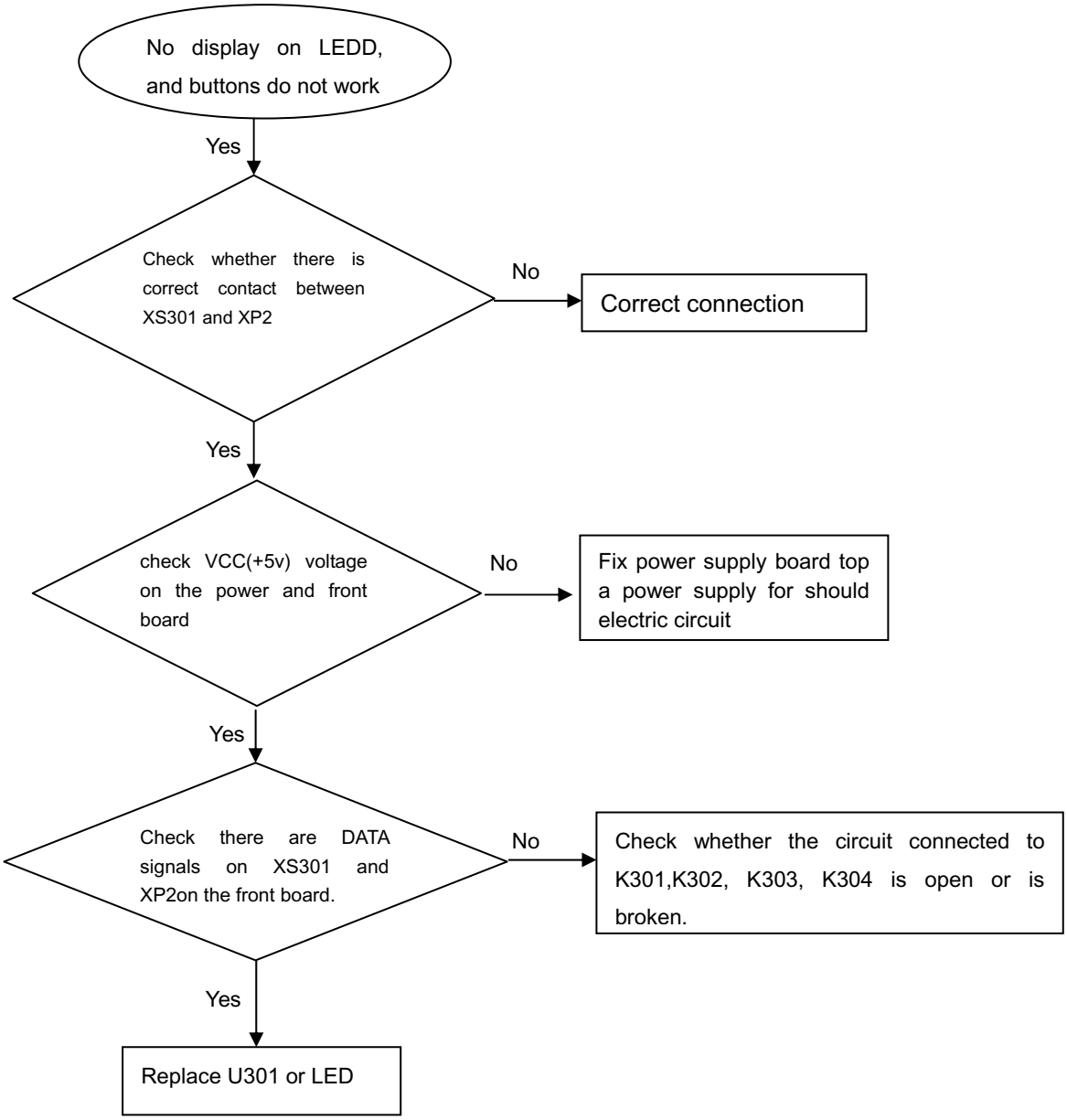
Disc cannot be read.


Disc cannot be read.
Yes
Check the FFC connection between 24P and the loader.
No
Check the loaded circuit
Yes
Check whether there is laser voltage (2V for VCD and 2.2V for DVD) on Collector of Q13、Q14.
No
1.Check voltage on pin 54 of U1 varies between 0 and 3.3V:
→3.3V for VCD
→0V for DVD
2.Check whether peripheral components are eroded or defect
Yes
CheckU1,U2,and peripheral components are eroded or badly soldered.
No
Re-solder or replace the defective parts
Yes
Check if there is RFO signal on pin8 of XP5. (The normal RFO signal is a clear reticulated wave)
No
Check U1 and peripheral components
Yes
Check the connection between U1
No
Correct connection
Yes
Replace U1 or loader.

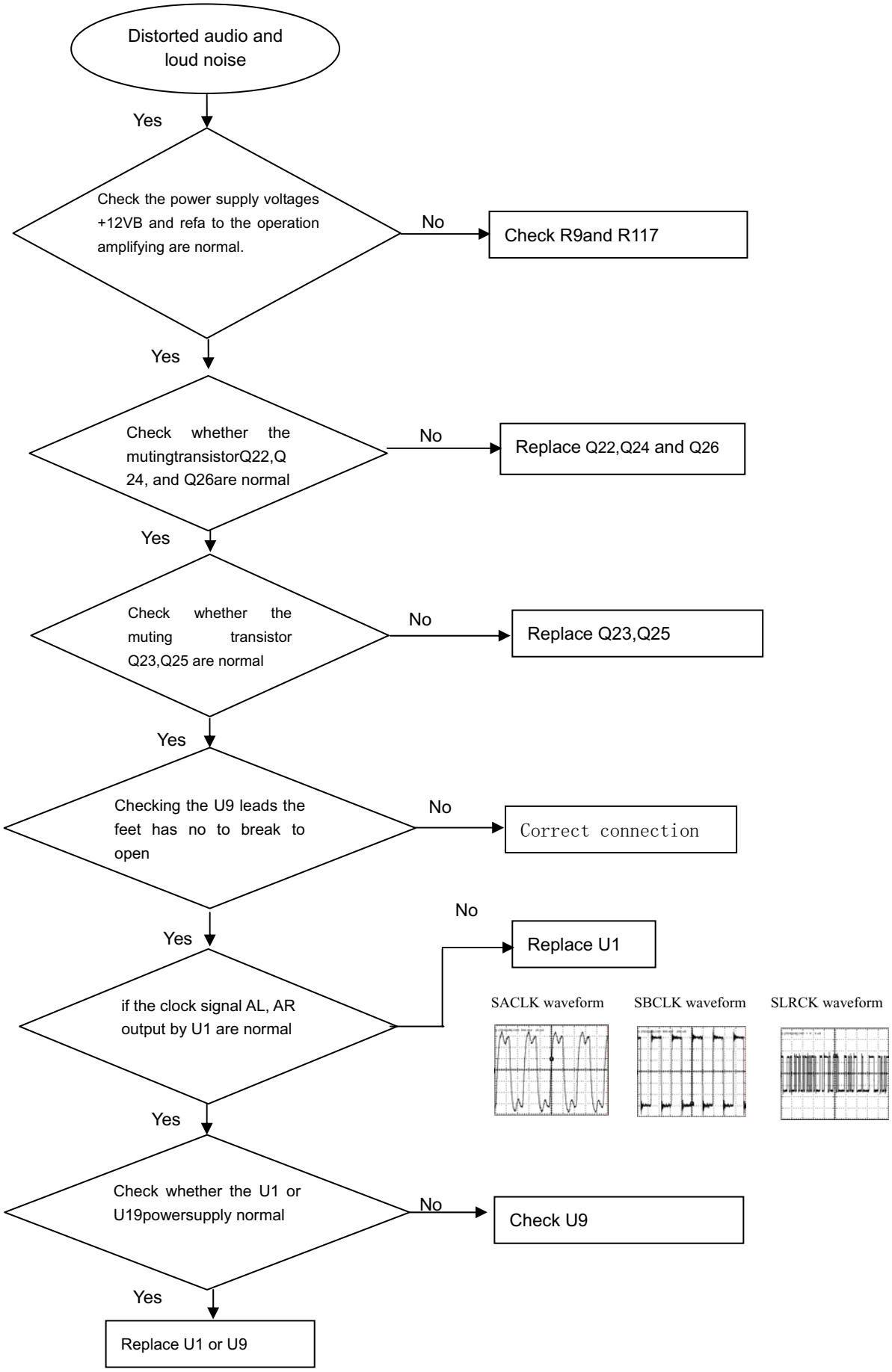
Only DVD disc or only disc except DVD can be played


Only DVD disc, or only disc except DVD can be Played.
Go
Check the FFC connection between 24pin and the loader.
No
Check the loaded circuit
Yes
Check laser voltage (2V) output on Collector of Q14 if pin 22 of U1 is at low level.
No
Check the solder status on U1 and peripheral components
Yes
Check whether there is voltage variance on pin 22 of U1.
No
check if bad solder exist on U1 and peripheral components
Yes
Check whether pin 1 to pin38 of U1 and peripheral components are badly soldered, defected
No
Replace the bad spare parts
Yes
Check Q10, Q11, Q12 whether in good condition
No
Correct connection
Yes
Change U1 or the loader.

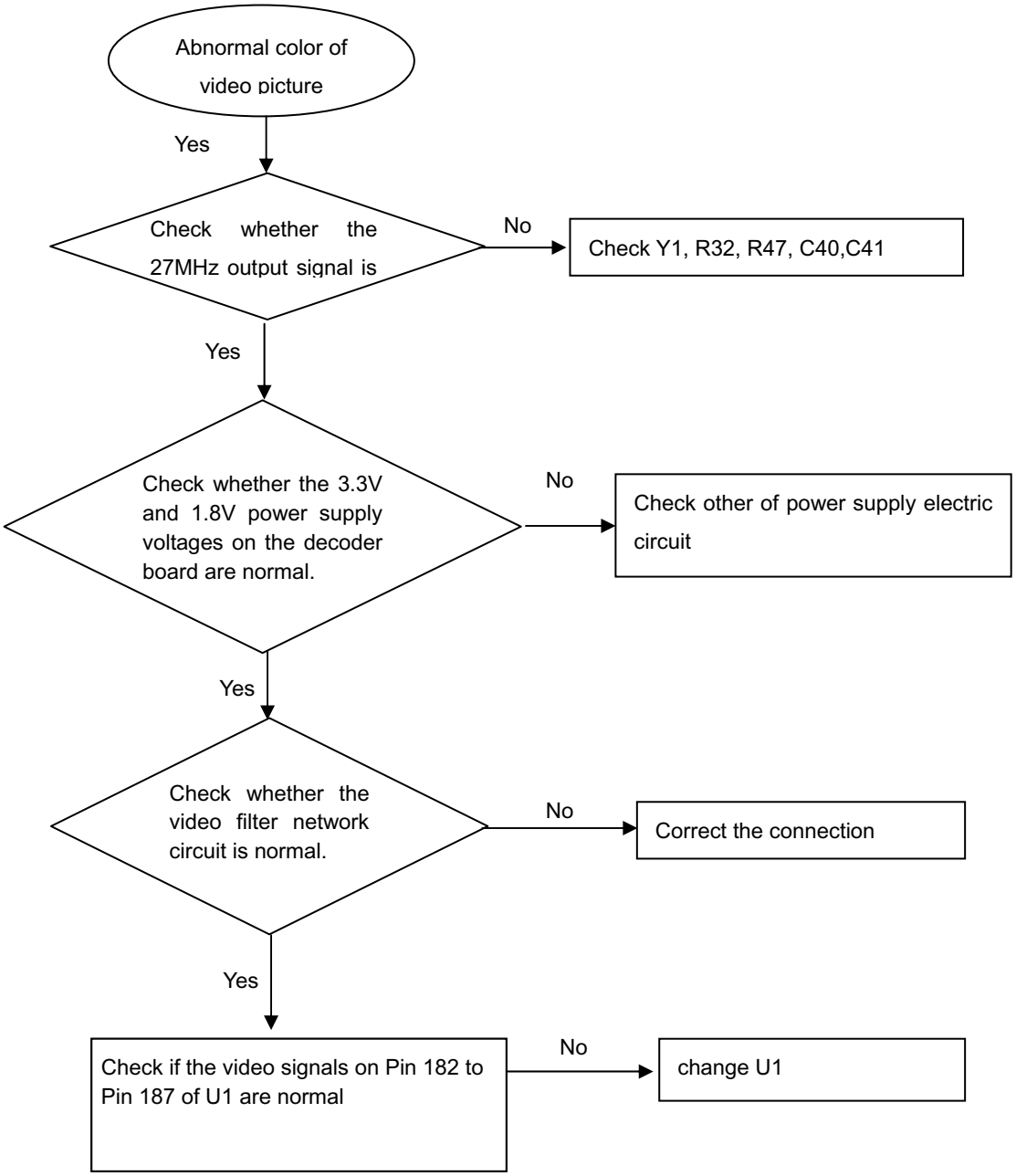
No display on LED, and buttons do not work


No display on LEDD, and buttons do not work
Yes
Check whether there is correct contact between XS301 and XP2
No
Correct connection
Yes
check VCC(+5v) voltage on the power and front board
No
Fix power supply board top a power supply for should electric circuit
Yes
Check there are DATA signals on XS301 and XP2on the front board.
No
Check whether the circuit connected to K301,K302, K303, K304 is open or is broken.
Yes
Replace U301 or LED

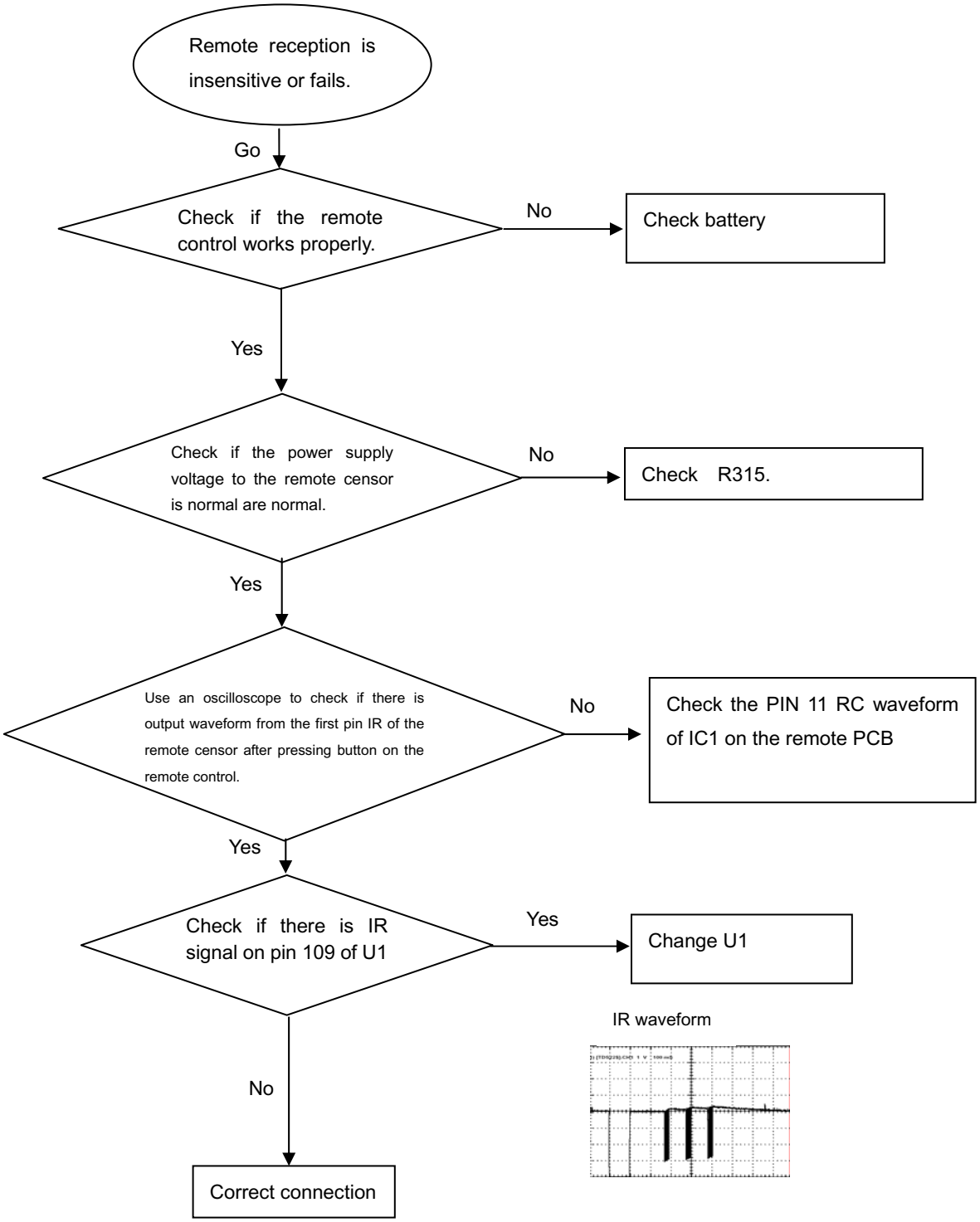
Distorted audio and loud noise



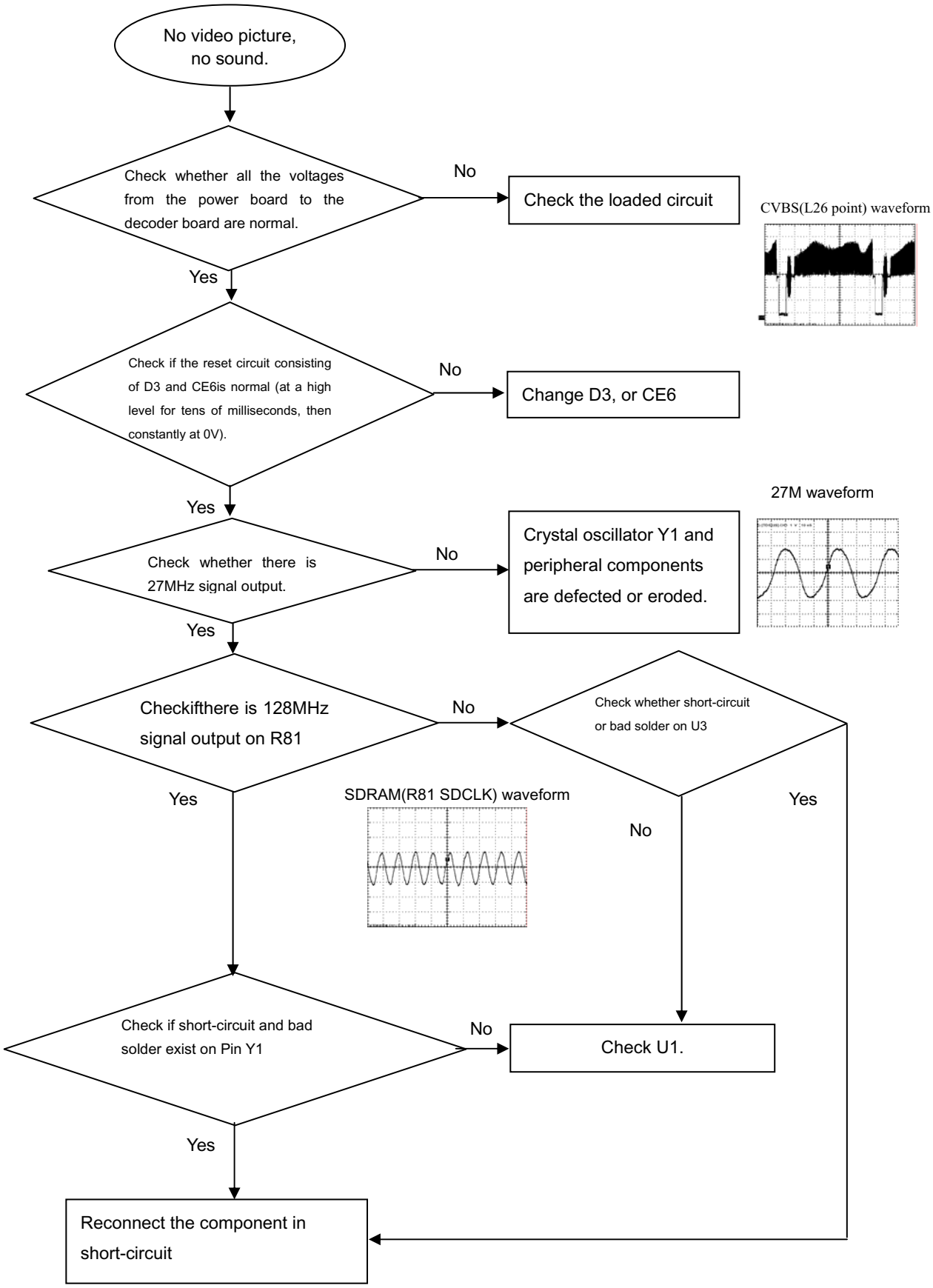
Abnormal color of video picture


Abnormal color of video picture
Yes
Check whether the 27MHz output signal is
No
Check Y1, R32, R47, C40,C41
Yes
Check whether the 3.3V and 1.8V power supply voltages on the decoder board are normal.
No
Check other of power supply electric circuit
Yes
Check whether the video filter network circuit is normal.
No
Correct the connection
Yes
Check if the video signals on Pin 182 to Pin 187 of U1 are normal
No
change U1

Remote reception is insensitive or fails.

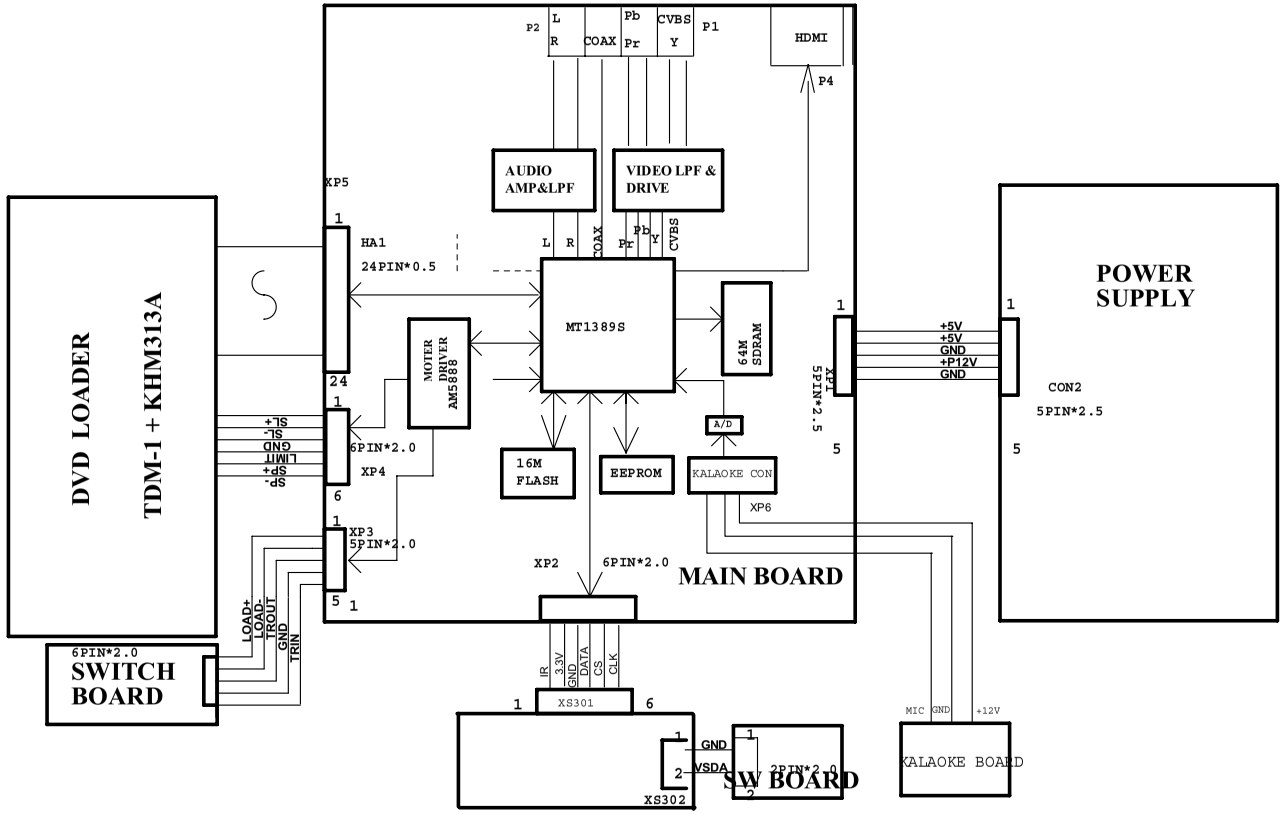

Remote reception is insensitive or fails.
Go
Check if the remote control works properly.
No
Check battery
Yes
Check if the power supply voltage to the remote censor is normal are normal.
No
Check R315.
Yes
Use an oscilloscope to check if there is output waveform from the first pin IR of the remote censor after pressing button on the remote control.
No
Check the PIN 11 RC waveform of IC1 on the remote PCB
Yes
Check if there is IR signal on pin 109 of U1
Yes
Change U1
IR waveform
No
Correct connection

No video picture, no sound.


No video picture, no sound.
Check whether all the voltages from the power board to the decoder board are normal.
No
Check the loaded circuit
CVBS(L26 point) waveform
Yes
Check if the reset circuit consisting of D3 and CE6is normal (at a high level for tens of milliseconds, then constantly at 0V).
No
Change D3, or CE6
Yes
27M waveform
Check whether there is 27MHz signal output.
No
Crystal oscillator Y1 and peripheral components are defected or eroded.
Yes
Checkifthere is 128MHz signal output on R81
No
Check whether short-circuit or bad solder on U3
Yes
SDRAM(R81 SDCLK) waveform
Yes
No
Check if short-circuit and bad solder exist on Pin Y1
No
Check U1.
Yes
Reconnect the component in short-circuit

4-1

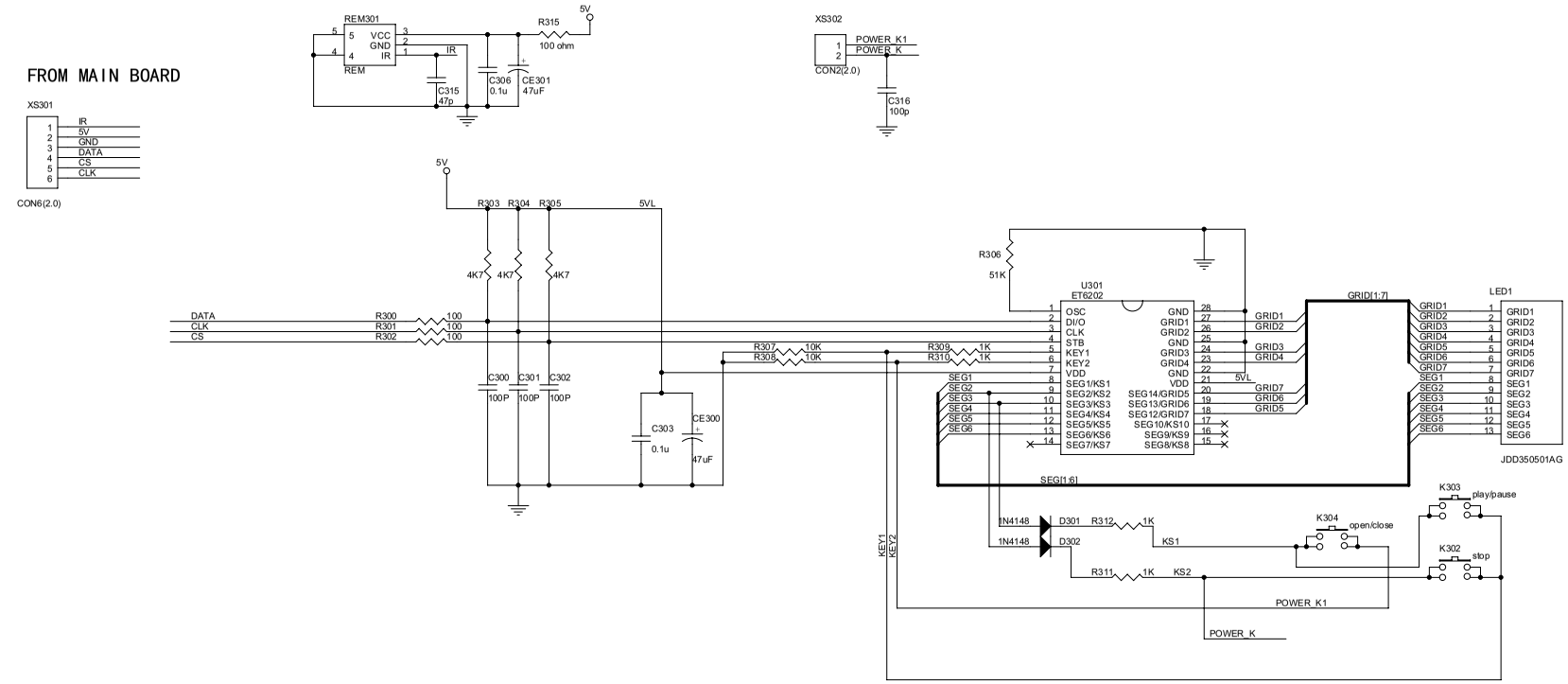
DVP3980KX/77 WIRING DIAGRAM



Remark: XP4 6PIN*2.0 is the same as 6PIN HS XP5 24PIN*0.5 is the same as 24PIN HS
XP3 5PIN*2.0 is the same as 5P HS PH-5Y/PH-5Y L=130MM
XP1 5PIN*2.5 is the same as TJC3-5Y/SCN-5P L=80MM
XP2 6PIN*2.0 is the same as 6PIN HS
XS302 2PIN*2.0 is the same as PH-2Y/SAW-2P L=170MM
XP6 3 PIN is the same as 3PIN SHIELD WIRE

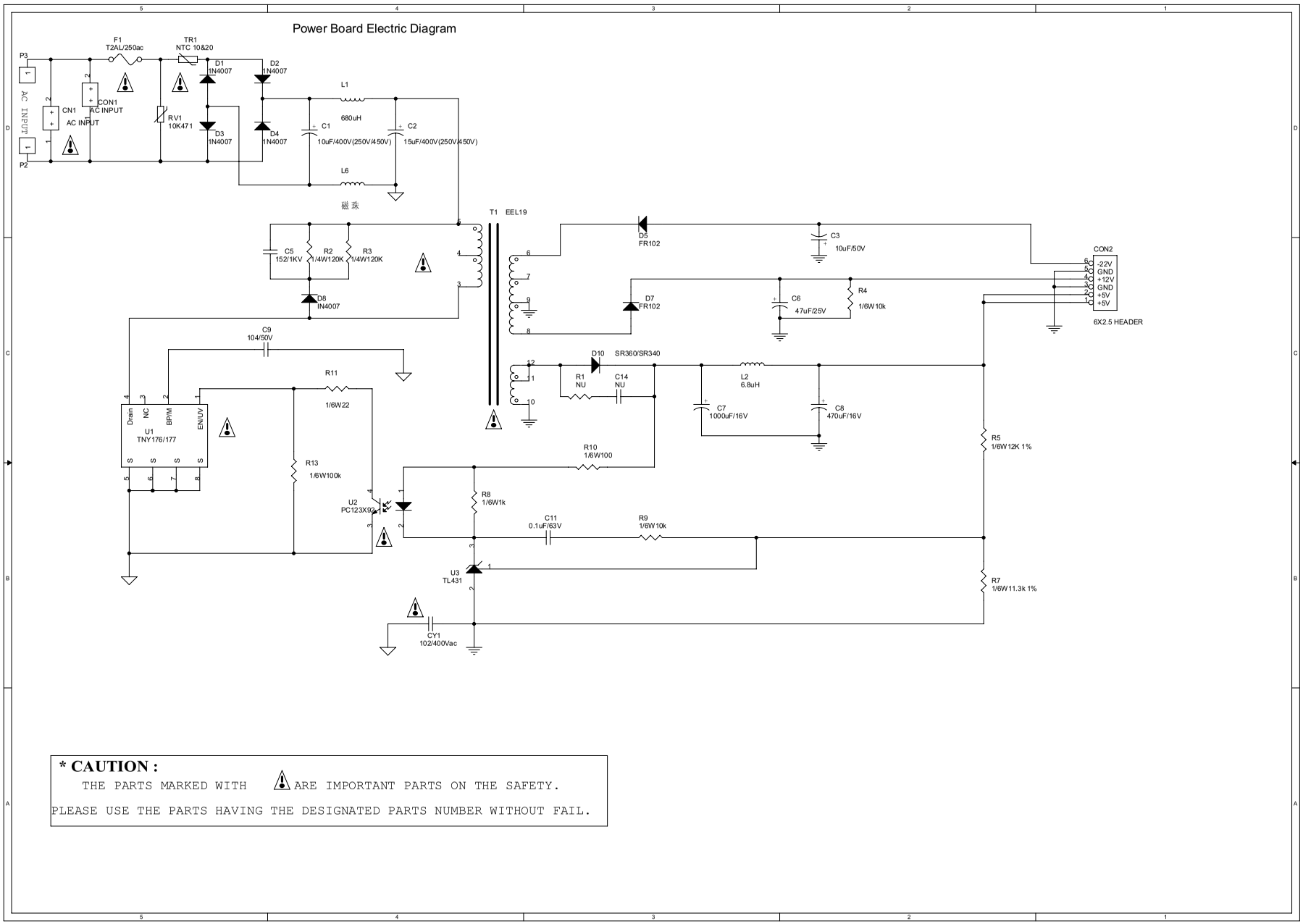
5-1

Front Board Electric Diagram



5-2

Power Board Electric Diagram



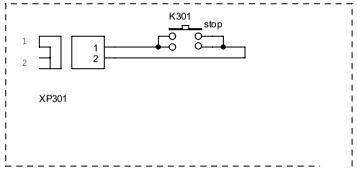
*** CAUTION :**

THE PARTS MARKED WITH ⚠ ARE IMPORTANT PARTS ON THE SAFETY.

PLEASE USE THE PARTS HAVING THE DESIGNATED PARTS NUMBER WITHOUT FAIL.

5-3

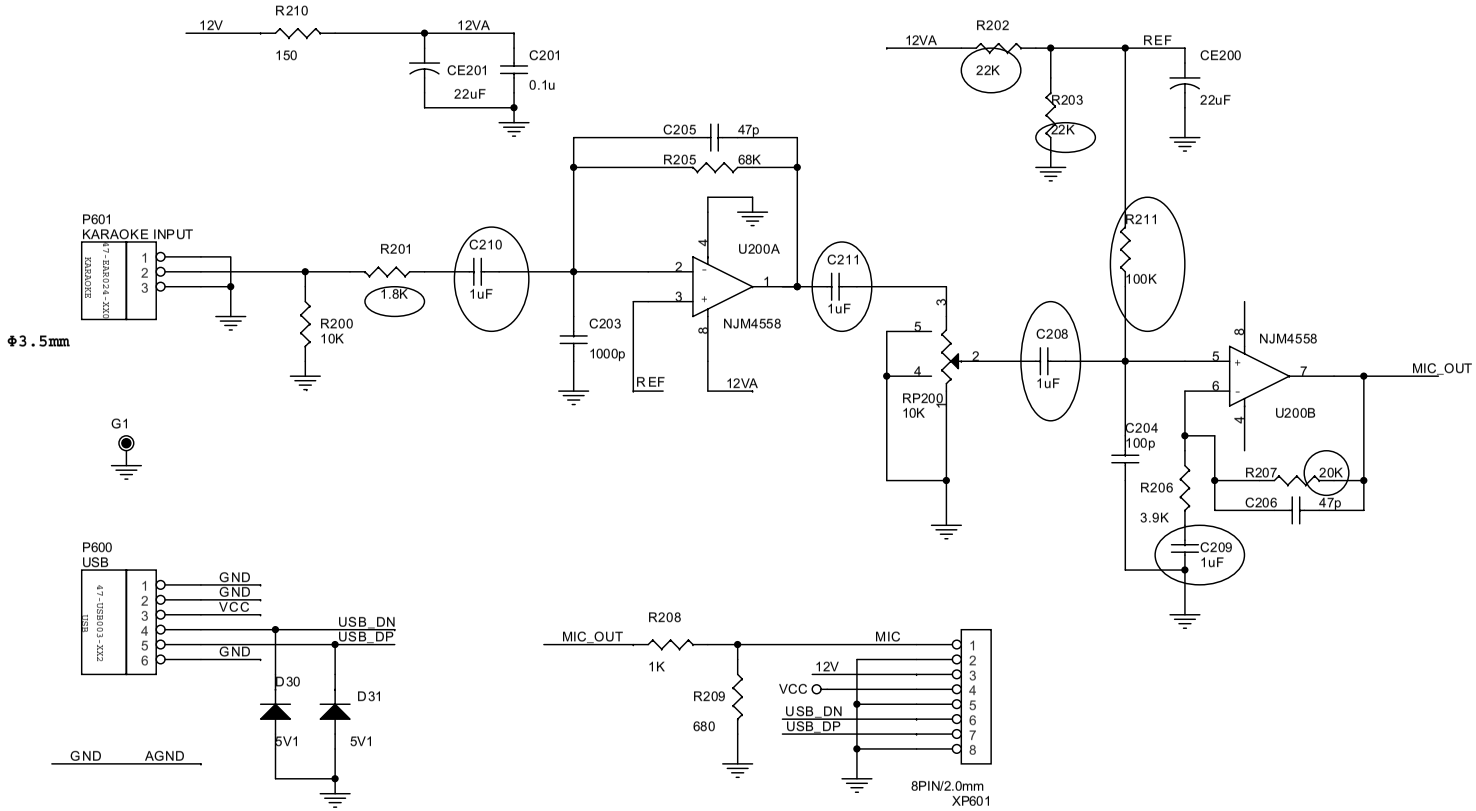
Switch Board Electric Diagram

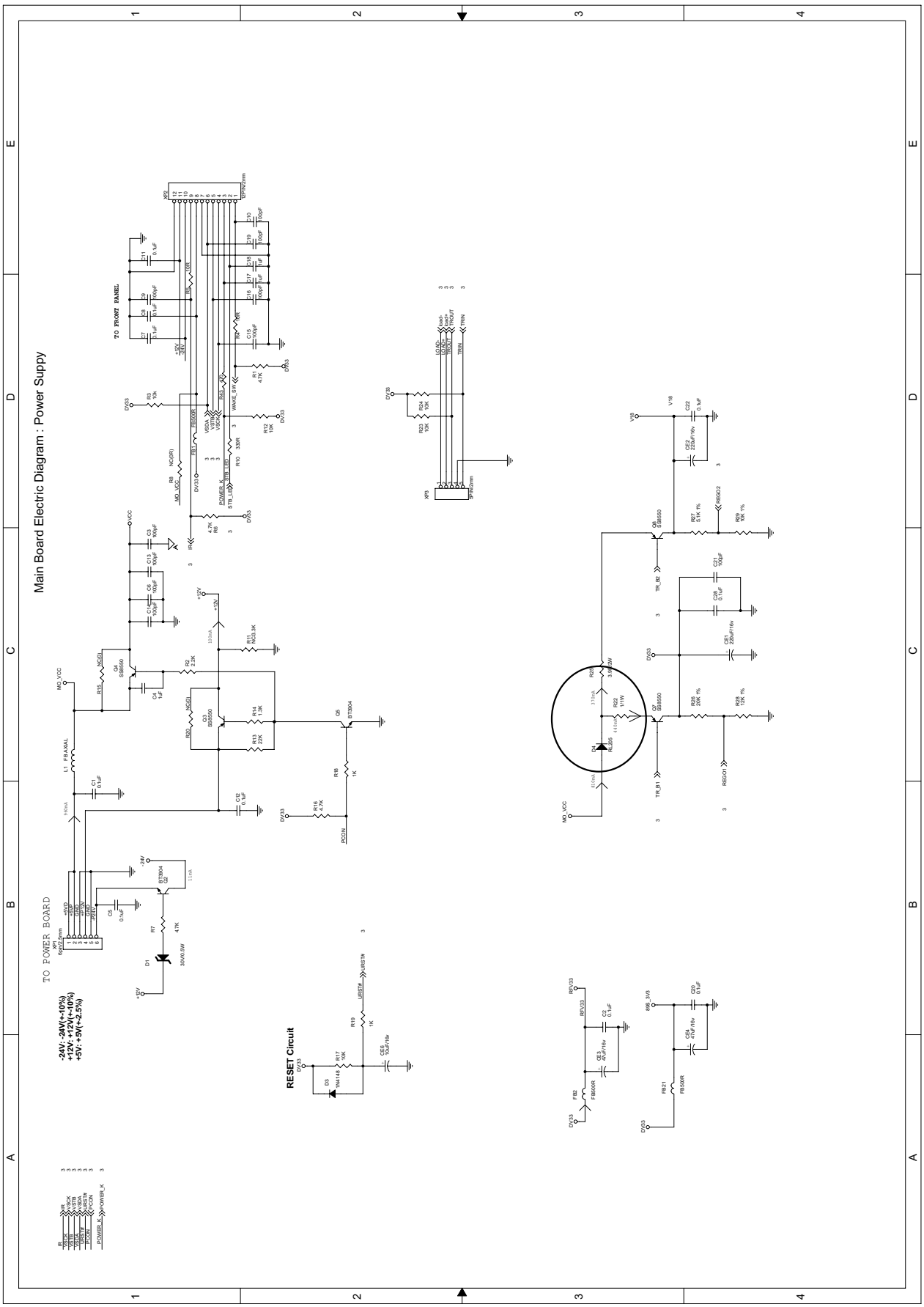


SWITCH BOARD

5-4

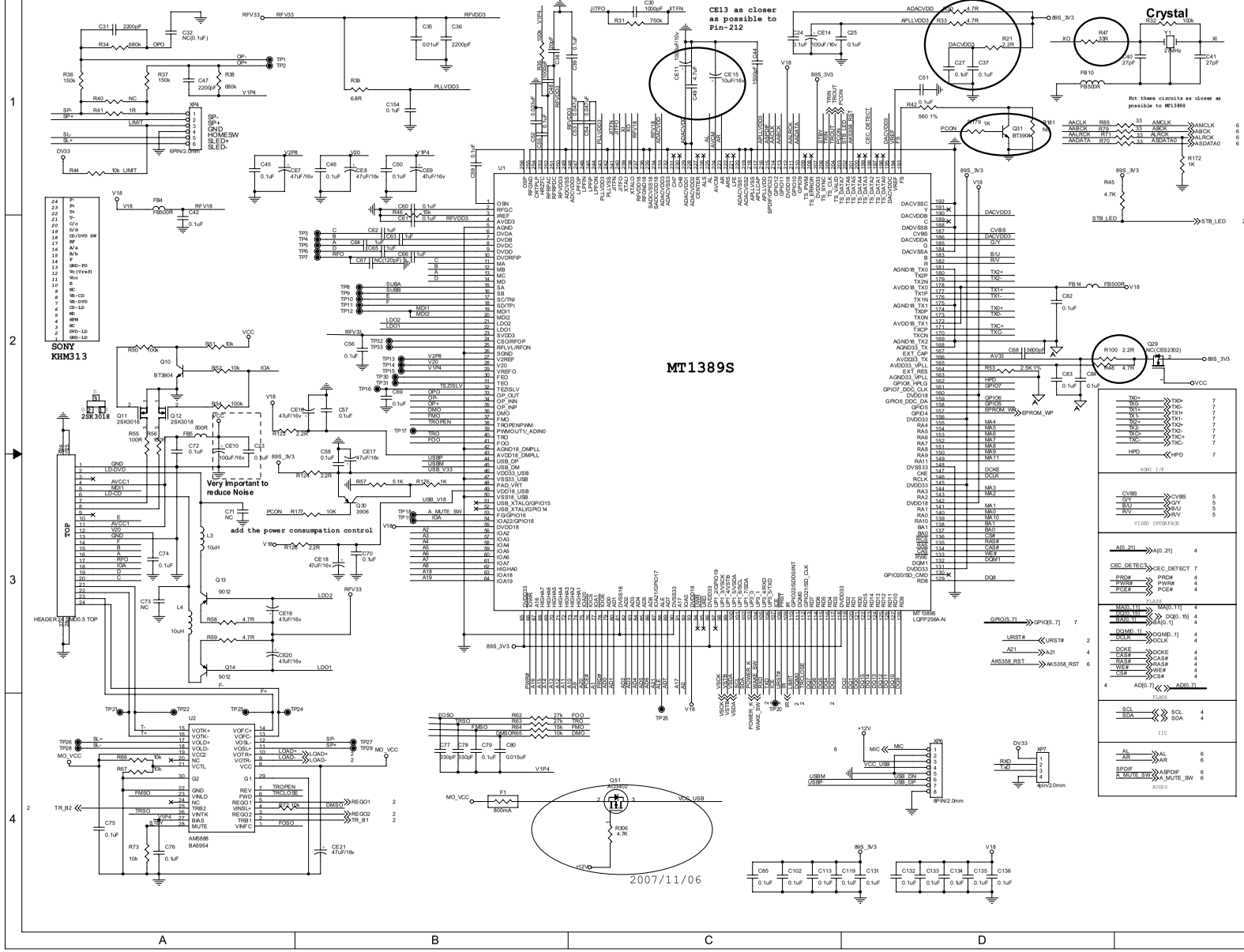
OK + USB Board Electric Diagram



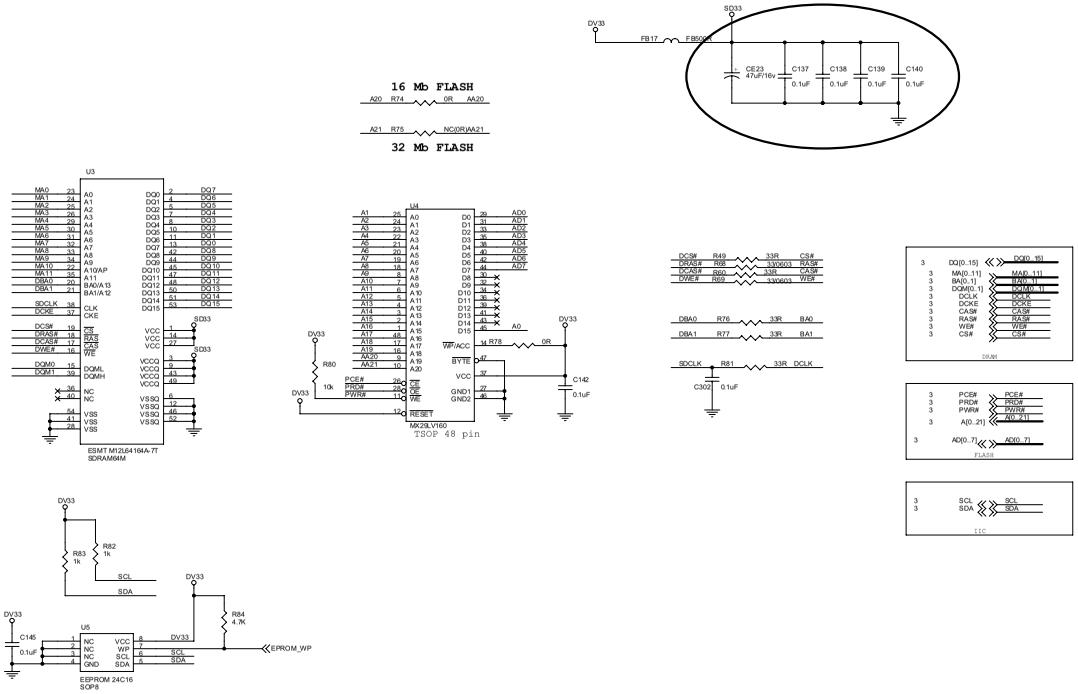

Main Board Electric Diagram : Power Suppy
TO POWER BOARD
-24V: -24V(+-10%)
+12V: +12V(+-10%)
+5V: +5V(+-2.5%)
RESET Circuit
TO FRONT PANEL

5-6

Main Board Electric Diagram: MT1389S

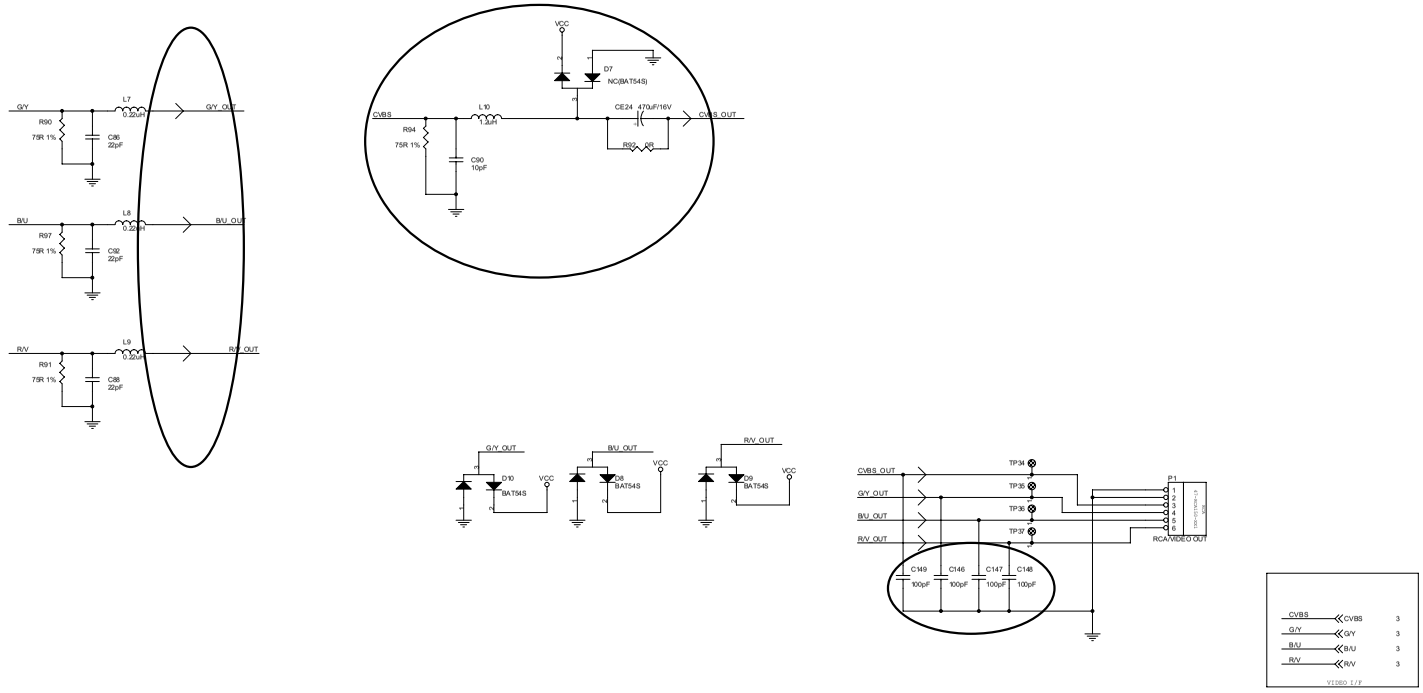


Main Board Electic Diagram : SDRAM & FLASH



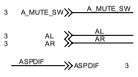
5-8

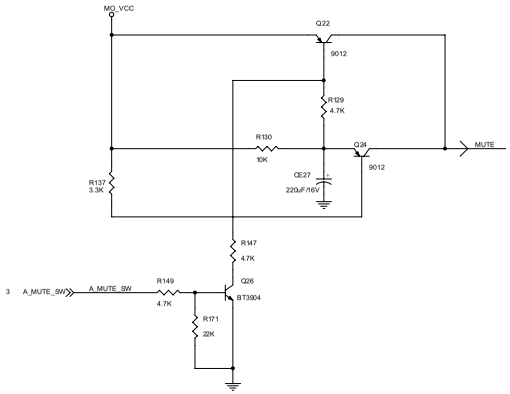
Main Board Electric Diagram: Video Out & AV-CONNECTOR



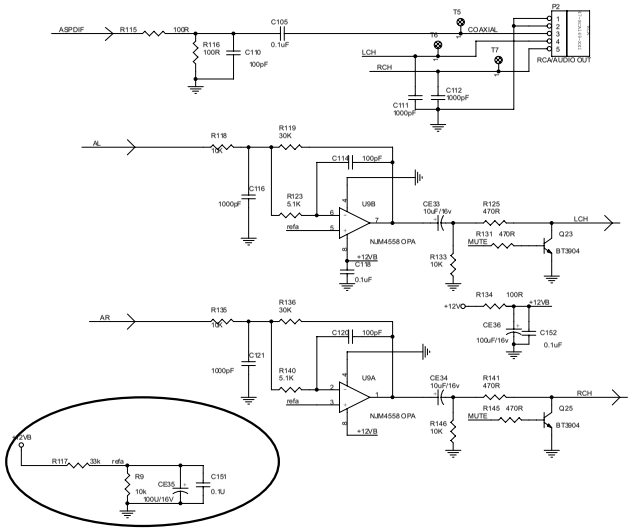
5-9

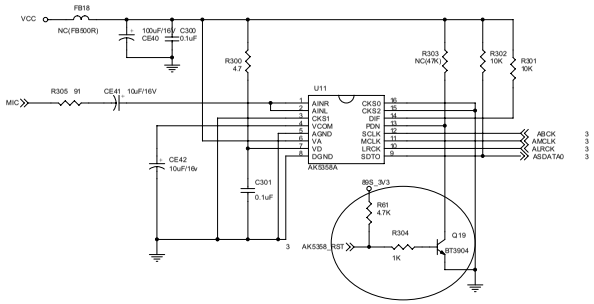
Main Board Electric Diagram: Audio Output





mute circuit

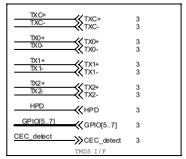


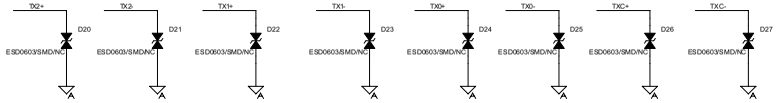


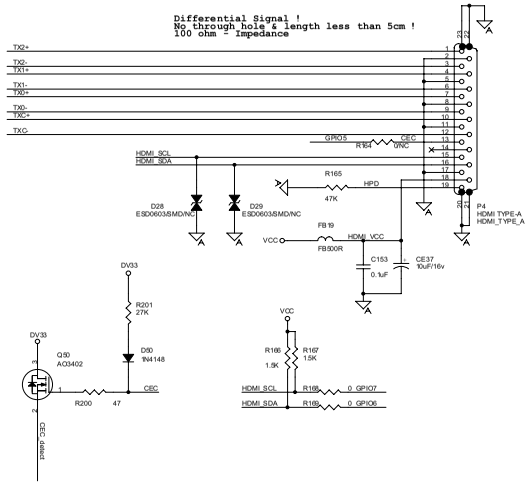
DIF PULL UP:I2S
CKS0,CKS1,CKS2 PULL Down:CLOCK SLAVE,ALL SPEED MODES

5-10

Main Board Electric Diagram: HDMI I/F

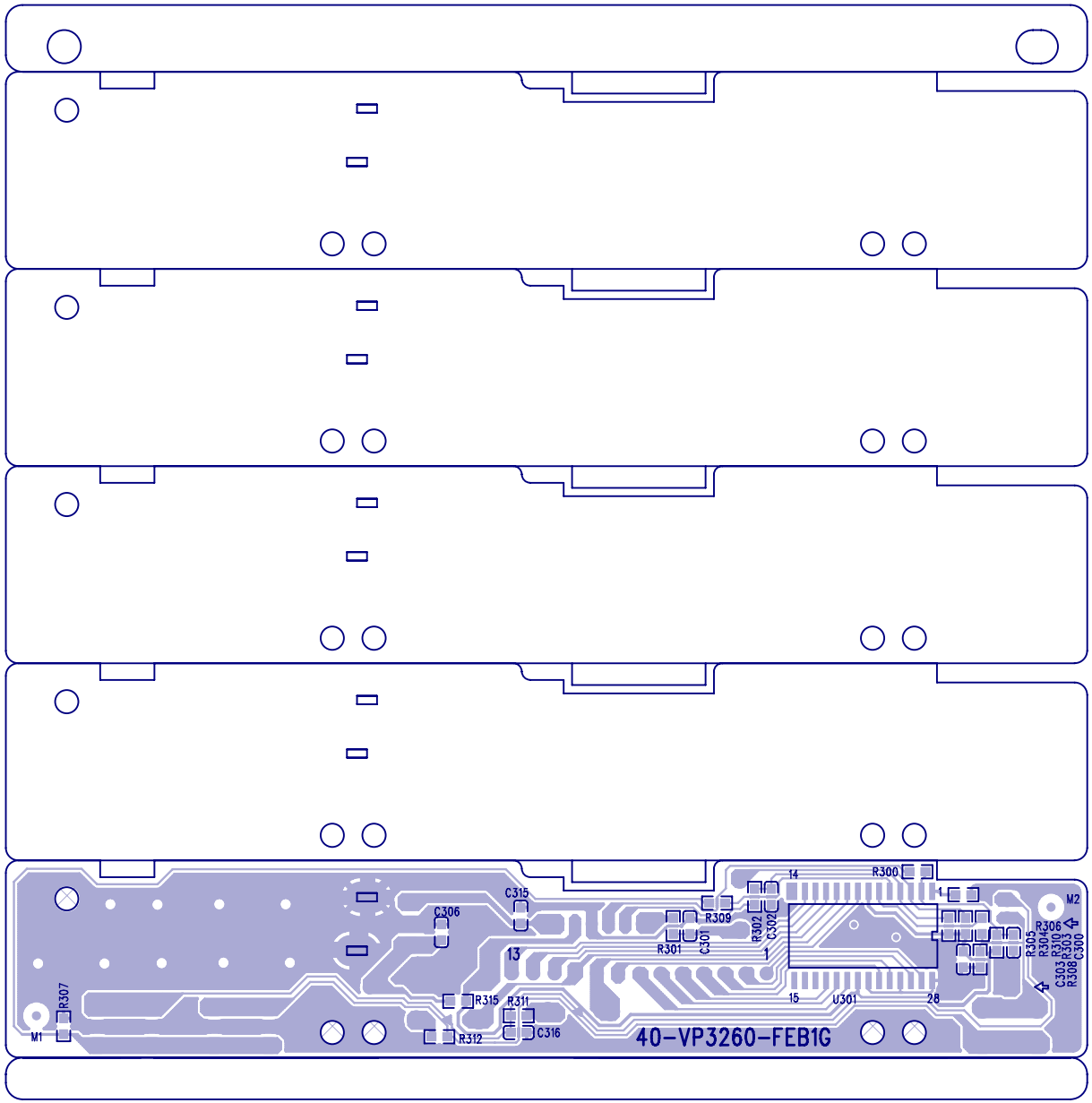






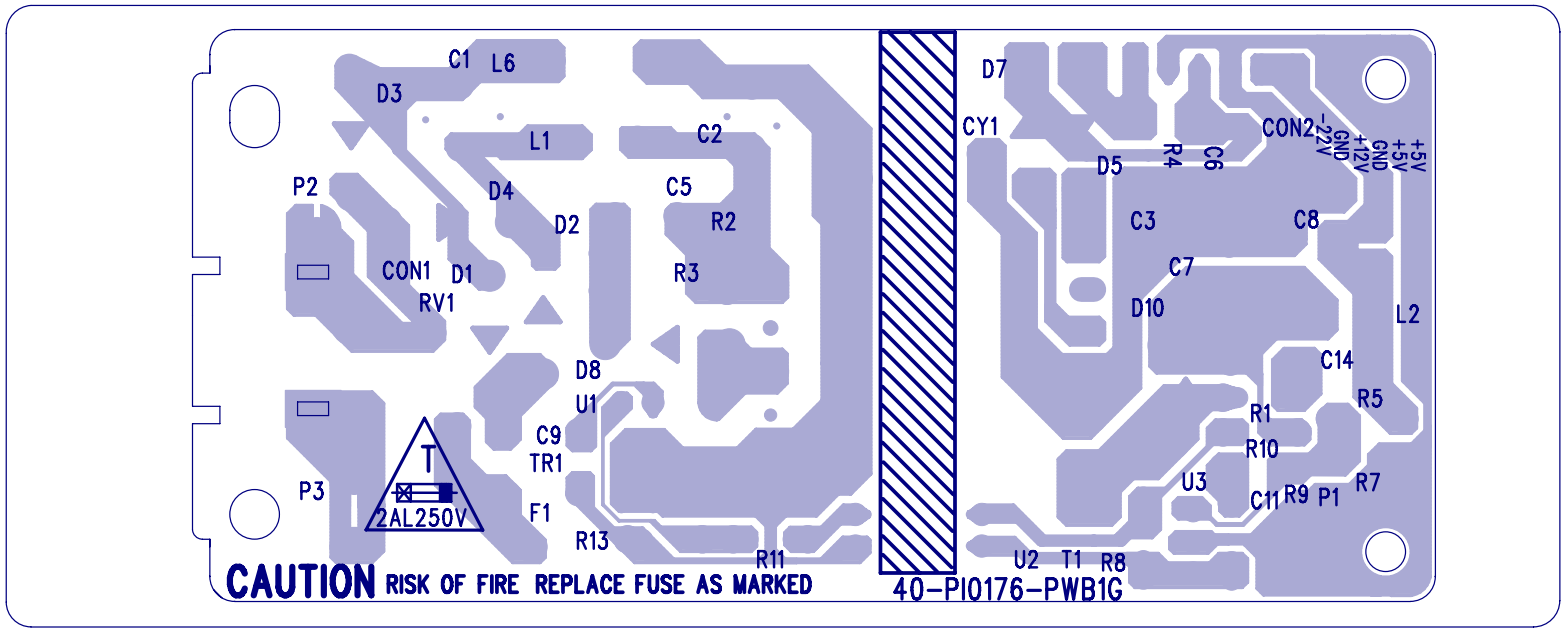
5-11

Front Board Print-layout (Bottom side)



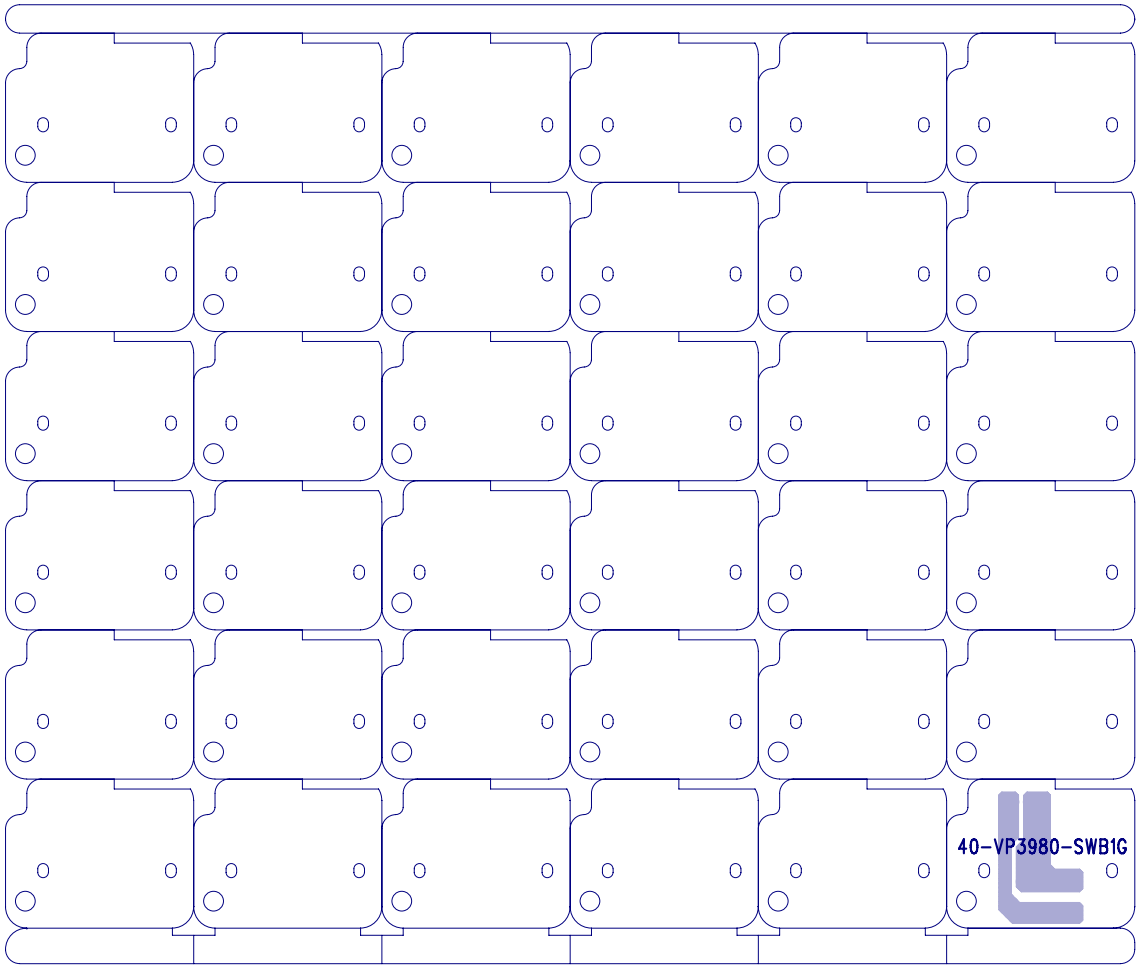
5-12

Power Board Print-layout (Bottom Side)



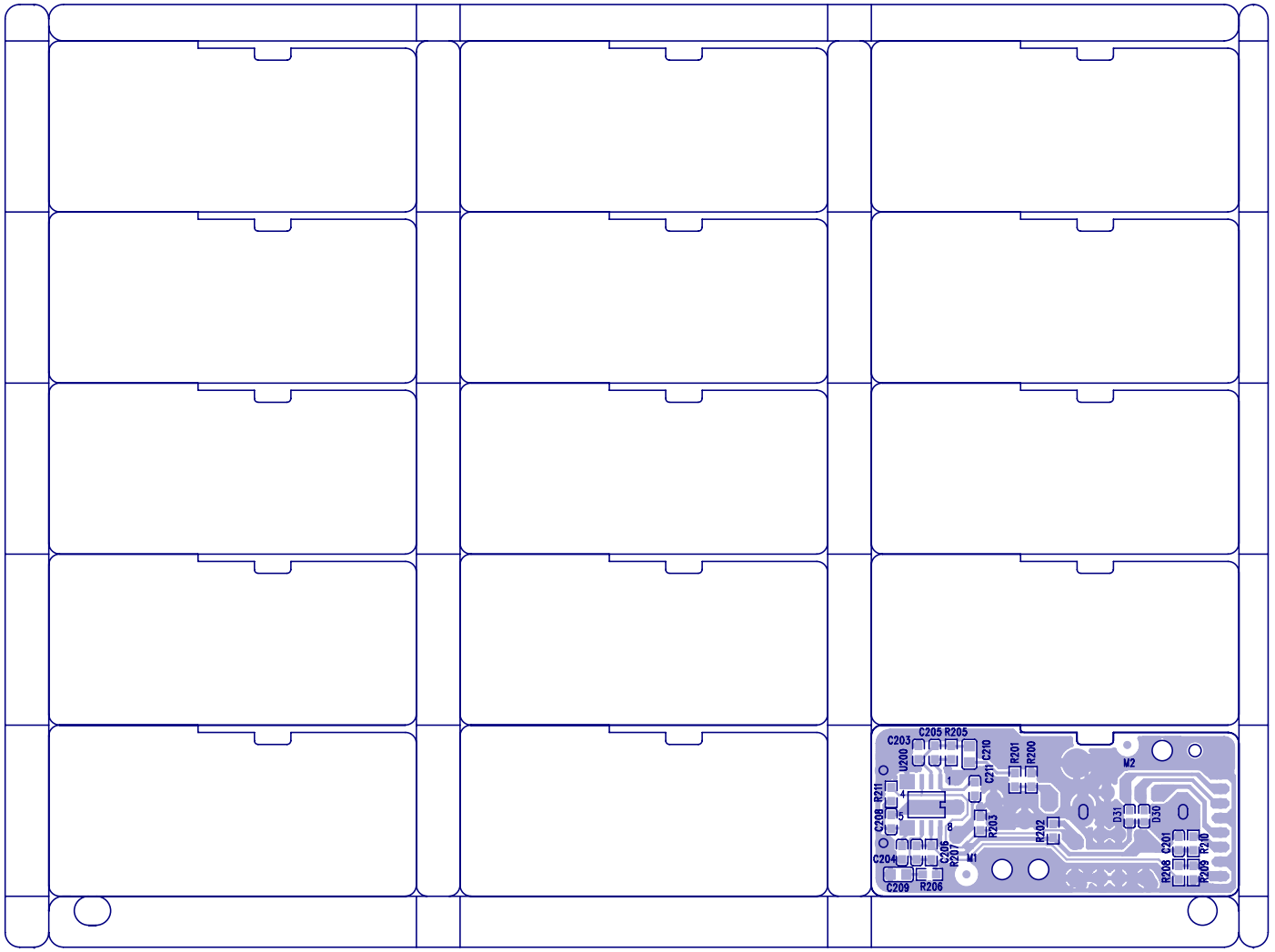
5-13

Switch Board Print-layout (Bottom Side)



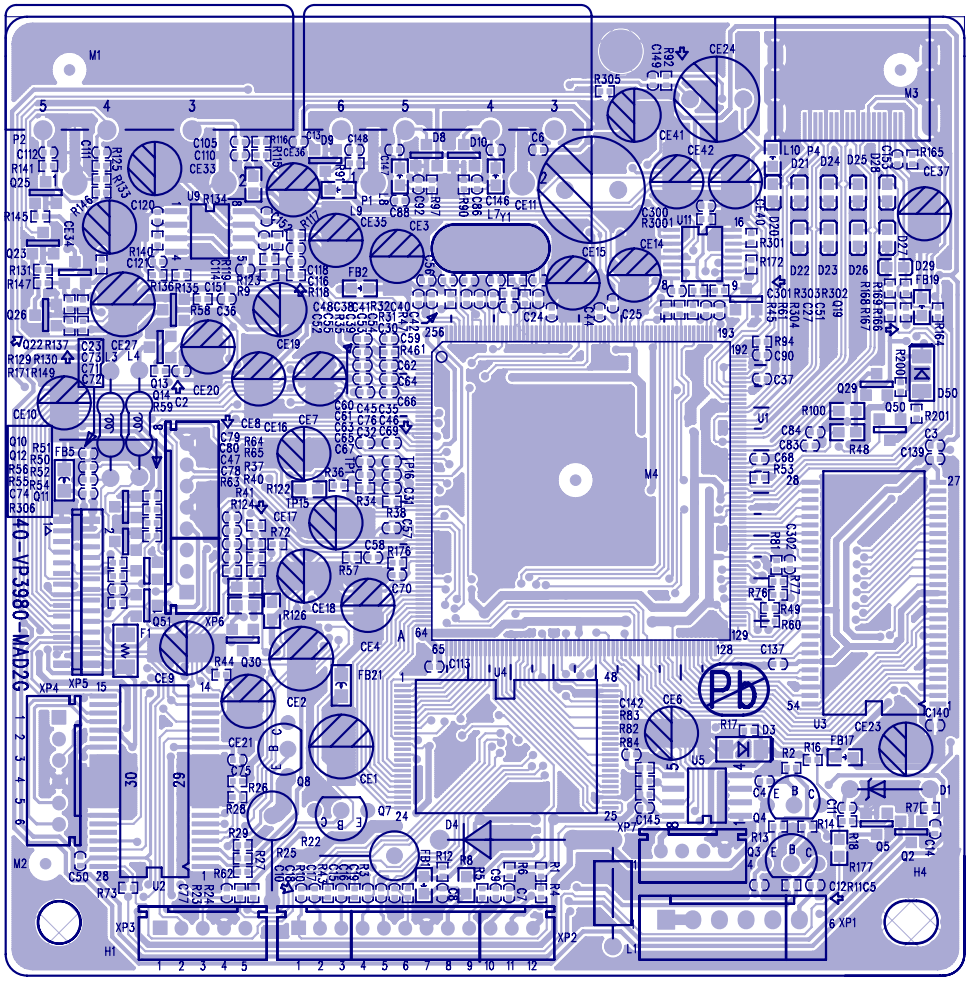
5-14

OK + USB Board Print-layout : Bottom side



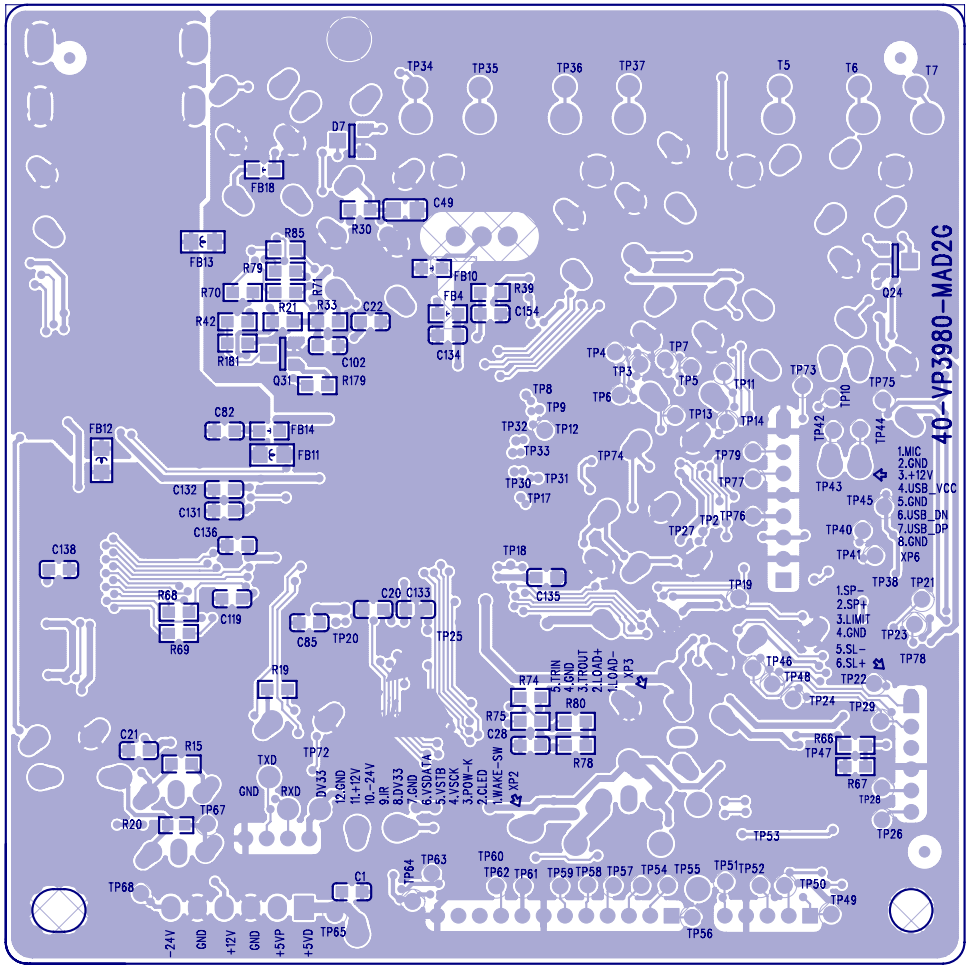
5-15

Main Board Print-layout (Top side)

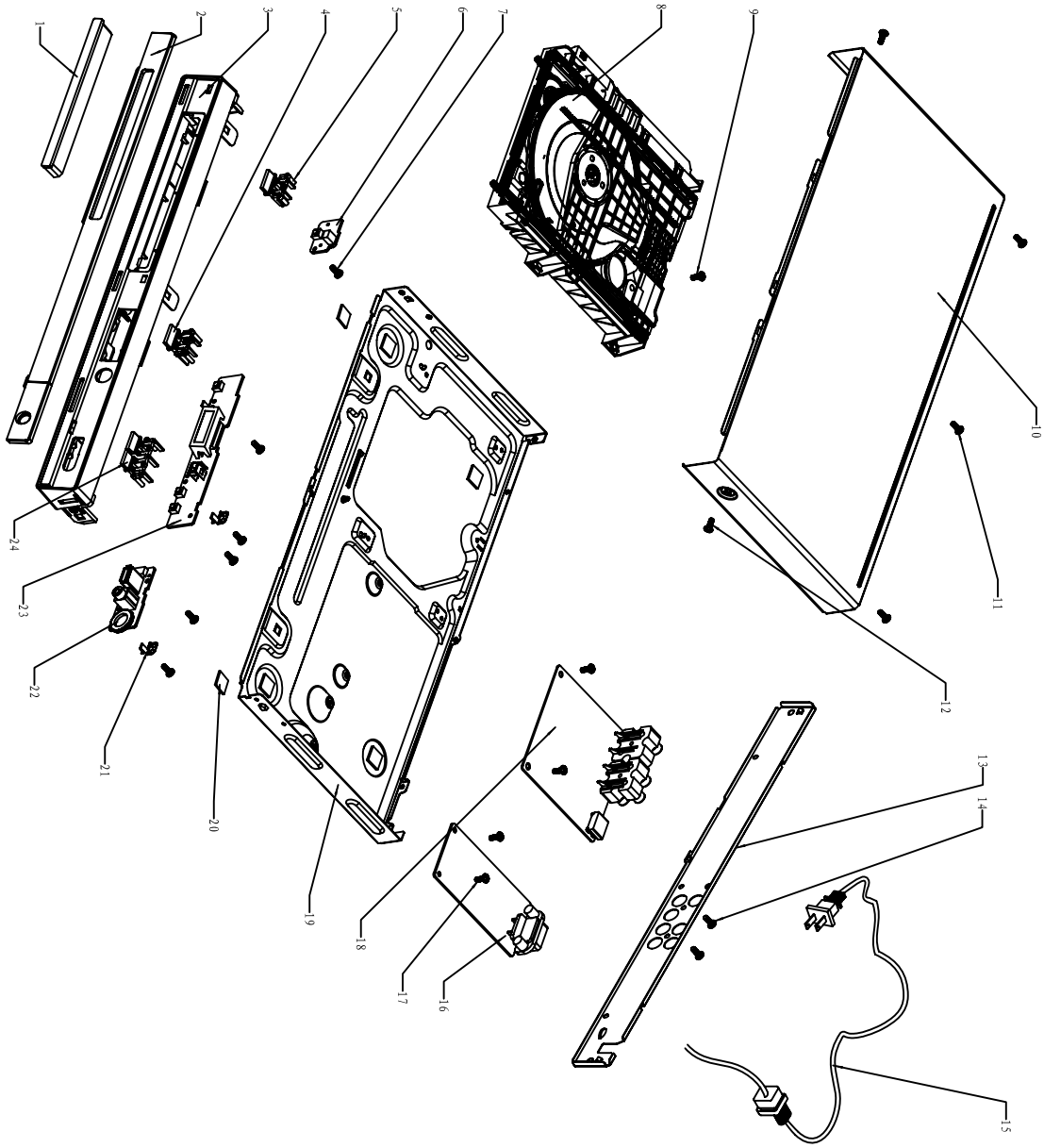


5-16

Main Board Print-layout (Bottom side)



DVP3980KX/77 Exploded View



It is a general view for DVP3980KX/77 .
Please refer to the model set for the detailed information.

Electrical PARTS LIST

No	12NC No.	Part Name	1
⚠ **16**	**310630880641**	**ASSY PSU BOARD DVP3980K/77**	**1**
D1	996510011047	DIODE IN4007	1
D10	996510011042	SR260	1
D2	996510011047	DIODE IN4007	1
D3	996510011047	DIODE IN4007	1
D4	996510011047	DIODE IN4007	1
D7	996500014043	DIODE FR102 (FAST RECOVERY)	1
D8	996510011047	DIODE IN4007	1
F1	996510001780	FUSE 2A 250V 5X20MM	1
L1	996510009942	COIL WIDTH	1
L2	996500032509	COIL SL0811-6R8K2R4	1
T1	996510010954	TRANSFORMER CONV	1
U1	996510010953	IC TNY176PN	1
U2	996500027867	PHOTOCOUPLER PS2561L1-1-V(WF)	1
U3	996500014609	IC AM431LP	1
18	**310630880601**	**ASSY MAIN BD DVP3980K/77**	**1**
D10	996510009859	SCHOTTKY DIODES BAT54S SOP-23	1
D3	996510009667	SMD. SWITCHING DIODE LL4148	1
D50	996510009667	SMD. SWITCHING DIODE LL4148	1
D7	996510009859	SCHOTTKY DIODES BAT54S SOP-23	1
D8	996510009859	SCHOTTKY DIODES BAT54S SOP-23	1
D9	996510009859	SCHOTTKY DIODES BAT54S SOP-23	1
L3	996500014082	COIL CHOKE 10UH +/-10%	1
L4	996500014082	COIL CHOKE 10UH +/-10%	1
Q10	996510009669	SMD.TRANSISTOR MMBT3904LT1 NPI	1
Q11	996510009769	N Channel MOSFET 2SK3108	1
Q12	996510009769	N Channel MOSFET 2SK3108	1
Q13	996510009670	TRANSISTOR SMT 3CG9012M	1
Q14	996510009670	TRANSISTOR SMT 3CG9012M	1
Q19	996510009669	SMD.TRANSISTOR MMBT3904LT1 NPI	1
Q22	996510009670	TRANSISTOR SMT 3CG9012M	1
Q23	996510009669	SMD.TRANSISTOR MMBT3904LT1 NPI	1
Q24	996510009670	TRANSISTOR SMT 3CG9012M	1
Q25	996510009669	SMD.TRANSISTOR MMBT3904LT1 NPI	1
Q26	996510009669	SMD.TRANSISTOR MMBT3904LT1 NPI	1
Q29	996510010922	ASM3402M/TR-LF SOT-23	1
Q3	996510009671	TRANSISTOR	1
Q30	996510009736	SMD TRANSISTORMMBT3906LT1 PNP	1
Q31	996510009669	SMD.TRANSISTOR MMBT3904LT1 NPI	1
Q4	996510009671	TRANSISTOR	1
Q5	996510009669	SMD.TRANSISTOR MMBT3904LT1 NPI	1
Q50	996510010949	MOSFET AO3402	1
Q7	996510009671	TRANSISTOR	1
Q8	996510009671	TRANSISTOR	1
U1	996510011041	IC MT1389DXE/S_L NO HDCP KEY	1
U11	996510012674	IC AK5358A	1
U2	996510009674	IC AM5888IC	1
U3	996510009863	64M SDRAM TSOP54 M12L64164A-7T	1
U4	996510009673	16m Flash 70ns 3.3V TSOP-48	1
U5	996510010944	IC 16K EEPROM M24C16-MN6	1
U9	996510010924	IC	1
Y1	996510009675	27MCL20PF	1
22	**310630880621**	**ASSY KARAOKE BD DVP3980K/77**	**1**
U200	996500032494	IC AS4558M	1
23	**310630880611**	**ASSY FRONT BD DVP3980K/77**	**1**
LED1	996510010957	LED	1
REM301	996510012689	IR RECEIVER MODULE 14MM 5V	1
U301	996510009665	IC ET6202 SOP-2	1
6	**310630880631**	**ASSY SWITCH BD DVP3980K/77**	**1**
8	**996510010477**	**ASSY- LOADER**	**1**
OPU	996510006029	LOADER (SONY)	1
	996510020568	**ASSY- LOADER**	**1**
OPU	996510018183	LOADER (IM)	1

MECHANICAL & ACCESSORIES PARTS LIST

No	12NC No.	Part Name	Q'ty
1	**996510012679**	**FRONT DOOR**	**1**
10	**996510007452**	**TOP COVER**	**1**
13	**996510017684**	**BACK PANEL**	**1**
⚠ **15**	**996510018111**	**POWER CORD**	**1**
⚠ **19**	**996510010483**	**BOTTOM CABINET**	**1**
20	**996510006463**	**PAD**	**1**
3	**996510017683**	**ASSY - FRONT CABINET**	**1**
AVCable	**996510001106**	**VIDEO CABLE 1500mm**	**1**
HDMICABLE	**996510007952**	**CABLE HDMI 19pin L=2M UL**	**1**
RC	**996510012677**	**REMOTE CONTROL**	**1**
XP1	**996510010478**	**TJC3-5Y/SCN-5P L=80MM**	**1**
XP2	**996510010479**	**6PIN HS L=120MM**	**1**
XP3	**996510004063**	**CABLE PH-5Y/PH-5Y L=130MM**	**1**
XP4	**996510001170**	**6PIN HS**	**1**
XP5	**996510001168**	**24PIN HS**	**1**
XP6	**996510012678**	**3PIN CABLE WITCH SHIELD**	**1**
XS302	**996510006820**	**CABLE PH-2Y/SAW-2P L=170MM**	**1**

REVISION LIST

Version 1.0

* Initial release

Version 1.1

* Adding DVP3980KX/77 (IM OPU)